

FIG. 1

AlaSerCysLeuAsnCysSerAlaSerIleIleProAspArgGluValLeuTyrArgGlu
1 GGCCTCCTGCTTGAAC TGCTCGCGAGCATCACCTGACAGGGAAAGTCCTTACCGAGA
CCGGAGGACGA CTTGACGAGCCGCTCGTAGTATGGACTGTCCCTCAGGAGATGGCTCT

PheAspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeu
61 GTTCGATGAGATGGAAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCT
CAAGCTACTCTACCTCTCACGAGAGTCGTGAATGGCATGTAGCTCGTTCCCTACTACGA

AlaGluGlnPheLysGlnLysAlaLeuGlyLeu
121 CGCCGAGCAGTTCAAGCAGAAGGCCCTCGGCCTCC
CGGGCTCGTCAAGTCGTCTCCGGGAGCCGGAGG

FIG. 3

GlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIleIleProAsp
1 CTGGCTCGTGGTCATAGTGGCAGGGTCGTCTGTCCGGAAAGCCGGCAATCATACTG
GACCGACGCACCAGTATCACCCGTCCCAGCAGAACAGGCCCTCGGCCGTTAGTATGGAC

T
ArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeuProTyr
61 ACAGGGAAAGTCCTCTACCGAGAGTCGTGAGATGGAAAGAGTGCTCTCAGCACTTACCGT
TGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTCTCACGAGAGTCGTGAATGGCA
A

IleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeuLeuGln
121 ACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAACAGGCCCTCGGCCCTGC
TGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAGTCGTCTCCGGAGCCGGAGGACG

ThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGlnLysLeu
181 AGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCCTGCTGTCAGACCAACTGGCAAAAAC
TCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGACCGTTTTG

GluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeuAlaGly
241 TCGAGACCTCTGGCGAAGCATATGTGAACTTCATCAGTGGATACAATACTTGGCGG
AGCTCTGGAAGACCCGCTCGTATACACCTTGAAGTAGTCACCCATGTTATGAACCGCC

LeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAlaAlaVal
301 GCTGTCAACGCTGCTGGTAACCCGCCATTGCTTCATTGATGGCTTTACAGCTGCTG
CGAACAGTTGCGACGGACCATTGGGGCGTAACGAAGTAACCGAAAATGTCGACGAC

ThrSerProLeuThrThrSerGln
361 TCACCAAGCCCCTAAACCACTAGCCAAA
AGTGGTCGGGTGATTGGTATCGGTT

FIG. 2

5-1-1	1	[ggccctcgcttgaactgtcgccgagc]ATCATACCTGACAGGGAAAG
81	1	GTCCGGGAAGCCGGCAATCATACCTGACAGGGAAAG
91	1	ctggctgcgtGGTCAAGTGGCAGGGTCGCTTGTCGGCAATCATACCTGACAGGGAAAG
1-2	1	GGTCATAGTGGCAGGGTCGTTGTCGGCAATCATACCTGACAGGGAAAG
5-1-1	48	TCCCTTACCGAGAGTTCGATGAGATGGAAAGAGTGCTCTCAGGACACTTACCGTACATCGAGCAAAGGGATGATGTC
81	36	TCCCTTACCGAGAGTTCGATGAGATGGAAAGAGTGCTCTCAGGACACTTACGTACATCGAGCAAAGGGATGATGTC
91	70	TCCCTTACCGAGAGTTCGATGAGATGGAAAGAGTGCTCTCAGGACACTTACGTACATCGAGCAAAGGGATGATGTC
1-2	60	TCCCTTATCGAGAGTTCGATGAGATGGAAAGAGTGCTCTCAGGACCTTACGTACATCGAGCAAAGGGATGATGTC
5-1-1	120	TCGCCGAGCAAGTCAAGCAGAAGGCCCTCGGCCTCC
81	108	TCGCCGAGCAAGTCAAGCAGAAGGCCCTCGGCCTCTGCAGACCGCTCCGTAGGCAGAGGTATCGCCC
91	142	TCGCCGAGCAAGTCAAGCAGAAGGCCCTCGGCCTCTGCAGACCGCTCCGTAGGCAGAGGTATCGCCC
1-2	132	TCGCCGAGCAAGTCAAGCAGAAGGCCCTCGGCCTCC
81	180	CTGCTGTCAGACCAACTGGCAAAAACCTCGAGACCTTCTGGCAAGACATATGTGGAACTTCACTCAGTGGGA
91	214	CTGCTGTCAGACCAACTGGCAAAAACCTCGAGACCTTCTGGCAAGACATATGTGGAACTTCACTCAGTGGGA
81	252	TACAATACTTGGGGCTTGTCAACGCTGCCTGGtaaccccgccattgtatggctttacagctg
91	286	TACAATACTTGGGGCTTGTCAACGCTGCCTGG
81	324	ctgttaccaggccacataaccacatggccaaa

FIG. 4

SerGlyLysSerGlnAlaIleIleProAspArgGluValLeuTyrrArgGluPheAspGluMet
1 GTCCGGGAAGCCGGCAATCATACCTGACAGGGAAAGTCCTACCGAGACTTCAGGAGATGGCTCTCAAGGCTACTTA

GluGluCysSerGlnHisLeuProTyrlleGluGlnGlyMetMetLeuAlaGluGlnPhe
61 GGAAGAGTGCCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTT
CCTTCTCACGAGAGTCGTGAATGGCATGCTAGCTTAGCTCGTCCCTACTACCGAGCGGCTCGTCAA

LysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaPro
121 CAAGCAGAAGGCCCTCGGCCAACCGCGTCCCCGTCAAGGCAGGGCAGTCCGTCTCCAATAGCGGG
GTTCCGTCTCGGGAGCCGGAGGGACGGTCTGGCAGGGCAGTCCGTCTCCAATAGCGGG

AlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysMetTrpAsnPhe
181 TGCTGTCCAGACCAACTGGCAAAACTCGAGACCTTCTGGCGAAGCCATATGTGGAACCT
ACGACAGGGTCTGGTGAACGGTTTGAGCTCTGGAAAGACCCGCTTCGTATAACACCTTGAA

IleSerGlyIleGlnTyrlleAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAla
241 CATCAGTGGATACATACT"TGCGGGCTTGCTCAACGCTGCCCTGGTAACCCCCCATG
GTAGTCACCCATTGTAACGCCGAACAGTTGGGACGGGACCATTTGGGTGATGGTT

SerIleuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
301 TTCATTGATGGCTTTACAGCTGCTGTCACCAAGCCCACCAACTAACCAACTAGCCAAA
AAGTAACCTACCGAAATAATGTCGACGGACAGTGGTGGGTGATGGTGAATGGTT

FIG. 5

AspAlaHisPheLeuSerGlnThrIysGlnSerGlyGluAsnLeuProTyrlLeuValAla
1 GATGCCCACTTTCTATCCCAGACAAAGCAGACTGGGAGAACCTTCCTTACCTGGTAGCG
CTACGGGTAAAGATAAGGTCTCGTTCTCACCCCTCTGGAAAGGAATGGACCATCGC
TyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrp
61 TACCAAGCCACCCGTGTGGCTAGGGCTCAAGCCCCATCCCCATCGTGGACACAGATGTTGG
ATGGTTCGGTGGCACACGGGATCCGAGTTGGGAGGGTAGCACCCCTGGTCTACACC
LYSCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeutYrArgLeu
121 AAGTGTTTGATTCCGCCTCAAGCCCACCCCTCCATGGCCAAACACCCCTGCTATAACAGACTG
TTCACAAACTAAGGGAGTTGGGGAGGTACCCGGTTGGGGACGGATATGTCGTGAC
GlyAlaValGlnAsnGluIleThrLeuThrHisProvalThrLysTrpIleMetThrCys
181 GGGCCTGTTAGAAATCACCCCTGACGCCACCCAGTCACCAAATACATGACATGC
CCGGACAAAGTCTTACTTTAGTGGACTGCGTGGCTCAGTGGTTATGTTAGTACTGTAAG
MetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyValLeuAla
241 ATGTCGGCCGACCTGGAGGTCTCACGAGCACCTGGTGGACCCACGGCAACGGCC
TACAGCCGGCTGGACCTCCAGCAGTGGGACCCACGGCAACGGCCAGGACCGA
AlaLeuAlaAlaLysLeuSerThrGlyCysValValIleValGlyArgValValLeu
301 GCTTTGGCCGGCTATTGGCTGTCACAGGCTGGTGTCAAGGGTGGCAGGGTCTG
CGAAACCGGGCATAACGGACAGTTGTCCGACCGTACCCGTCCCAGCAGAAC

-----Overlap with 81-----
SerGlyLysProAlaIleLeuAspArgGluValLeutYrArg
361 TCCGGAAAGCCGGCAATCACCTGACAGGGAAAGTCTACCGAG
AGGCCCTTCGGCCGTTAGTATGGACTGTCAGGAGATGGCTC

FIG. 6

1 AspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAla
GATGCCCACTTCTATCCAGACAAAGCAGAGTGGGAGAACCTCCTTACCTGGTAGCG
CTACGGGTGAAAGATAAGGTCTGTTCGTCACCCCTCTTGGAAAGGAATGGACCATCGC
61 TyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrp
TACCAAGCCACCGTGTCGCTAGGGCTCAAGCCCCCTCCCCATCGTGGGACCAGATGTGG
ATGGTTCGGTGGCACACCGCATCCCAGTTGGGGAGGGGTAGCACCCCTGGTCTACACC
121 LysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeu
AAGTGGTTGATTGCCTCAAGCCACCCCTCATGGCCAACACCCCTGCTATACAGACTG
TTCACAAACTAACGGAGTCGGTGGAGTACCCGGTTGAGTACGATATGTCTGAC
181 GlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCys
GGCGCTGTTCAAATGAAATCACCTGACGCCACCCAGTCACCAAATACATCATGACATGC
CCCGACAAGTCTTACTTAGTGGACTGCGTGGTCAGTGGTTATGTAGTACTGTACG
241 MetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAla
ATGTCGGCCGACCTGGAGGTGTCGTACAGCAGCACCTGGGTGCTCGTGGCGCGTCCTGGCT
TACAGCCGGCTGGACCTCCAGCAGTGTGCTGGACCCACGAGCAACCGCCGCAGGACCGA
301 AlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeu
GCTTGGCCCGTATTGCCTGTCACACAGGCTGCGTGGTCATAGTGGCAGGGTCGTCTTG
CGAAACCGCCGATAACGGACAGTTGTCGACCGACCAGTATCACCCGTCCCAGCAGAAC
361 SerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMet
TCCCGGAAGCCGGCAATCATACCTGACAGGGAAAGTCCTCTACCGAGAGTTCGATGAGATG
AGGCCCTCGGCCGTTAGTATGGACTGTCCCTCAGGAGATGGCTCTCAAGCTACTCTAC
421 GluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPhe
GAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTGCCGAGCAGTTC
CTTCTCACGAGAGTCGTGAATGGCATGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAG
481 LysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaPro
AAGCAGAAGGCCCTCGGCCTCCTGAGACCCGCTCCGTAGGCAGAGGTATGCCCT
TTCGTCTTCGGGAGCCGGAGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGA
541 AlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPhe
GCTGTCAGACCAACTGGAAAAACTCGAGACCTCTGGCGAAGCATATGTGGAACTTC
CGACAGGTCTGGTTGACCGTTTGAGCTCTGGAAGACCCGCTCGTATACACCTTGAAAG
601 IleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAla
ATCAGTGGGATACAATACTTGGCGGGCTTGTCACCGCTGCTGTAACCCGCCATTGCT
TAGTCACCCATGTTATGAACCGCCCGAACAGTTCGACGGACCATTGGGCGGTAAACGA
661 SerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
TCATTGATGGCTTTACAGCTGCTGTCACCAGCCCACAAACCACTAGCCAAA
AGTAACCTACCGAAAAATGTCGACCGACAGTGGTCGGGTGATTGGTATCGGTTT

FIG. 7

-----Overlap with 81-----

1 PheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeu
CTTTACAGCTGCTGTCAACCAGCCACTAACCACTAGCCAAACCCCTCCTTCACATAT .
GAAAATGTCGACGACAGTGGTCGGGTGATTGGTGATCGGTTGGGAGGAGAAGTTGTATA

61 GlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAla
TGGGGGGGTGGGTGGCTGCCAGCTGCCGCCGGTGCCGCTACTGCCTTGTTGGCG
ACCCCCCCCACCCACCGACGGGTGAGCGGCCGGGACCGCGATGACGAAACACCCGC

121 GlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeu
CTGGCTTAGCTGGCGCCCATCGCAGTGGACTGGGAAGGTCTCATAGACATCC
GACCGAACATCGACCGCGCGGTAGCCGTACAACCTGACCCCTTCAGGAGTATCTGTAGG

181 AlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGlu
TTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTCTGTGGCATTCAAGATCATGAGCGGTG
AACGTCCCATAACCGCGCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCAC

241 ValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeu
AGGTCCCCTCACGGAGGGACCTGGTCAATCTACTGCCGCCATCCTCTCGCCCGAGCCC
TCCAGGGGAGGTGCCTCTGGACCAGTTAGATGACGGCGTAGGAGAGCGGGCTCGGG

301 ValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAla
TCGTAGTCGGCGTGGCTGTGCAGCAATACTGCGCCGCACGTTGGCCCAGGGAGGGGG
AGCATTAGCGCCGACACAGTCGTTATGACGGCGCGTGCAACCGGGCCGCTCCCCC

361 ValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
CAGTGCAGTGGATGAACCGGCTGATAGCCTCGCCTCCGGGGAACATGTTCCCC
GTCACGTACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTGGTACAAAGGGG

FIG. 8A

SerIleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArg
1 TCCATTGAGACAATCACCGCTCCCCACGGATGCTCTTCCCACACTCAACGTCGGGGCAGG
AGTAACCTGTAGTGCAGGGGTCTACGACAGGGCGTGAGTTGCAGGCCCGTCC

ThrGlyArgGlyLysProGlyIleTyrrArgPheValAlaProGlyGluArgProSerGly
61 ACTGGCAGGGGAAGGCCAGGCATCTACAGATTGTGGCACCGGGAGGGCCCTCCGGC
TGACCGTCCCCCTTGGTCCGTTAGATGTCTAACACCGTGGCCCTCGCGGGAGGCCG

MetPheAspSerSerValLeuCysGluCystyrrAspAlaGlyCysAlaIrrptyrGluLeu
121 ATGTTGACTCGTCCGGTCTGTGAGTGCTATGACGCCGGCTGTGCTTGGTATGAGCTC
TACAAGCTGAGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAG

ThrProAlaGluThrThrValArgLeuArgAlaIrrtyrMetAsnThrProGlyLeuProval
181 ACGCCCGCCGAGACTACAGTTAGGCTACGAGGGTACATGAACACCCCCGGCTTCCGTG
TGGGGGGGCTCTGATGTCAAATCCGATGCTCGCATGTA

FIG. 8B

CysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAla
241 TGCCAGGACCATCTTGAATTGGAAAGGGGTCTTACAGGCCACTCATATAAGATGCC
ACGGTCCCTGGTAGAACCTAAACCTCCCCAGAAATTGTCGGGAGTGAGTTCTACCGG

HisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrlLeuValAlaTyrgln
301 CACTTCTATCCCAGACAAGCAGAGTGGGGAGAACCTCCCTACCTGGTAGCGTACCAA
GTGAAAGATAGGGTCTGTTCTGCTCACCCCTCTGGAAAGGAATGGACCATGGCATGGT
-----Overlap with 36-----
AlaThrValCysAlaArgAlaGlnAlaProProSerTrpAspGlnMetTrpLysCys
361 GCCACCCGTTGGCTAGGGCTCAAGCCCCATCGTGGGACCAAGATGTGGAAGTGT
CGTGGCACACCGGATCCCGAGTTGGGGAGGGTAGCACCCTGGTCTACACCTTCACA

LeuIleArgLeuLysProThrProLeuLeuTyrrArgLeuGlyAla
421 TTGATTCGCCTCAAGGCCACCCCTCCATGGCCAAACACCCCTGGCTATACAGACTGGGGCT
AACTAAGCGGAGTTCCGGGGAGGTACCCGGTGGAGGATATGTCTGACCCGGGA

FIG. 9A

1 SerIleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArg
1 TCCATTGAGACAATCACGCTCCCCCAGGATGCTGTCCTCCGCACTCAACGTCGGGGCAGG
AGGTAACTCTGTTAGTGCAGGGGGTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCC
61 ThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGly
61 ACTGGCAGGGGGAAAGCAGGCATCTACAGATTTGTGGCACCGGGGAGCGCCTCCGGC
TGACCGTCCCCCTCGGTCCGTAGATGTCTAACACCGTGGCCCCCTCGCGGGGAGGCG
121 MetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeu
121 ATGTTGACTCGTCCGTCTGTGAGTGTATGACGCAAGCTGTGCTTGGTATGAGCTC
TACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAG
181 ThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProVal
181 ACGCCCGCCGAGACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGCTTCCCCTG
TGCGGGCGGCTCTGTATGCTCAATCCGATGCTCGATGTACTTGTGGGGCCCCGAAGGGCAG
241 CysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAla
241 TGCCAGGACCATCTTGAATTGGGAGGGCGTCTTACAGGCCACTCATATAGATGCC
ACGGTCCTGGTAGAACCTAAAACCTCCCGCAGAAATGTCCGGAGTGAAGTATATCTACGG
301 HisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGln
301 CACTTCTATCCCAGACAAAGCAGAGTGGGAGAACCTTCTTACCTGGTAGCGTACCAA
GTGAAAGATAAGGTCTGTTCGTCTACCCCTCTTGGAAAGGAATGGACCATCGCATGGTT
361 AlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCys
361 GCCACCGTGTGCGTAGGGCTCAAGCCCCATCGTGGGACAGATGTGGAAAGTGT
CGGTGGCACACCGCAGTCGGAGTTCTGGGAGGTACCCGGTTGTGGGACGATATGTC
TACACCTTCACA
421 LeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTryArgLeuGlyAla
421 TTGATTGCGCTCAAGCCCACCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCT
AACTAACGGAGTTCTGGGACTGCGTGGGTCACTGGTTATGTAGTACTGTACGTACAGC
481 ValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSer
481 GTTCAGAATGAAATCACCTGACGCACCCAGTCACCAAATACATCATGACATGCA
GATGCTTACTTTAGTGGGACTGCGTGGGTCACTGGTTATGTAGTACTGTACGTACAGC
541 AlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeu
541 GCCGACCTGGAGGTGTCACGAGCACCTGGGTGCTCGTGGCGCGTCTGGCTGCTTTG
CGGCTGGACCTCCAGCAGTGCCTGGACCCACGAGCAACCGCCGAGGACCGACGAAAC
601 AlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeuSerGly
601 GCCCGTATTGCGCTGTCAACAGGCTGCGTGGTCATAGTGGGAGGGTCGTCTGTCCGG
CGGCGCATACGGACAGTTGTCCGACGCACCGATCACCCGTCAGCAGAACAGGCC
661 LysProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGlu
661 AAGCCGGCAATCATACCTGACAGGGAACTCTACCGAGAGTTGATGAGATGGAAGAG
TTCGGCCGTTAGTATGGACTGICCCCTTCAGGAGATGGCTCTCAAGCTACTTACCTTC
721 CysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGln
721 TGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTGCCGAGCAGTTCAAGCAG
ACGAGAGTCGTGAATGGCATGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAGTTCGTC
781 LysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaVal
781 AAGGCCCTCGGCCCTCTGCAGACCGCGTCCGTCAGGCAGAGGTTATCGCCCTGCTGTC
TTCCGGGAGCCGGAGGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAG

FIG. 9B

GlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSer
841 CAGACCAACTGGAAAAACTCGAGACCTTCTGGCGAAGCATATGTGGAACCTCATCAGT
GTCTGGTTGACCGTTTGAGCTCTGGAAGACCCGCTCGTATAACACCTGAAGTAGTC

GlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeu
901 GGGATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCGCCATTGCTTCATTG
CCCTATGTTATGAACCGCCCCAACAGTGCACGGACCATTGGGGCGGTAAACGAAGTAAAC

MetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsn
961 ATGGCTTTACAGCTGCTGTCAACCAGCCCACTAACCACTAGCCAAACCCCTCCTCAAC
TACCGAAAATGTCGACGACAGTGGTCGGGTGATTGGTATCGGTTGGGAGGACAAGTTG

IleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheVal
1021 ATATTGGGGGGGTGGGTGGCTGCCAGCTCGCCGCCGGTGCCGCTACTGCCTTGTG
TATAACCCCCCACCACCGACGGTCGAGCGGCCACGGCGATGACGGAAACAC

GlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAsp
1081 GGCCTGGCTTAGCTGGCGCCCATGGCAGTGGACTGGGAAGGTCCATAGAC
CCCGCACCGAACGACCGCGGCGGTAGCCGTACAACCTGACCCCTCAGGAGTACTG

IleLeuAlaGlyTyrGlyAlaGlyValAlaAlaGlyAlaLeuValAlaPheLysIleMetSer
1141 ATCCTTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTCTGTGGCATTCAAGATCATGAGC
TAGGAACGTCCCATACCGCGCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCG

GlyGluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGly
1201 GGTGAGGTCCCCTCCACGGAGGACCTGGTCAATCTACTGCCGCCATCCTCTCGCCCCGG
CCACTCCAGGGGAGGGTGCCTCCTGGACCAAGTTAGATGACGGCGGTAGGAGAGCGGGCC

AlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGlu
1261 GCCCTCGTAGTCGGCGTGGTCTGTGCAGCAAATCTACTGCCGCCACGTTGGCCGGGAG
CGGGAGCATCAGCCGCACCAAGACACGTCGTTATGACGCGGCCGTGCAACCGGGCCGCTC

GlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
1321 GGGGCAGTGCAGTGGATGAACCGGGCTGATAGCCTTCGCCTCCGGGGAACCATGTTCCCC
CCCCGTCACGTACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTGGTACAAAGGGG

FIG. 10

LeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaValAlaTyrArgGlyLeuAsp
 1 CTCGCCGCATTGGCGATCAATGCCGTGGCCTACTACCGGGTCTTGAC
 GAGGGCGTTCGACCAGCTAACCCGTAGTTACGGCACCGGATGATGGGCCAGAACTG

ValSerValIleProThrSerGlyAspValValValAlaThrAspAlaLeuMetThr
 61 GtGTCCGTCAATCCCACCGAGGGCATGTCGTCGGCAACCGATGCCCTCATGACC
 CACAGGCAGTAGGGCTGGTCCGGCTACAAACAGCAGCACGGCTACGGGAGTACTGG

121 Gly Tyr Thr Glu Asp Phe Asp Ser Val Ile Asp Tyr Asn Thr Cys Val Thr Glu Thr Val
CCG ATAT GCCC GTGA AGCT GAG CC ACT AT CTG AT GTT TAT GG ACAC AGT GGG TCT GTC AG

AspPheSerLeuAspProThrPheThrIleGluThrIleLeuProGlnAspAlaVal
 181 GATTAGCCTTGACCCCTACCTTACCAATTGAGACAATCACGCTCCCCAGGATGCTGTC
 CTAAGTCGGAACTGGATGGAAAGTGGTAACTCTGTATTAGTGGGAGGGTCTAACGACAG

clone 35-----
Ser Arg Thr Gln Arg Arg Gly Arg Thr
241 T C C C G C A C T C A A C G T C G G G C A G G A C T G
A G G C G T G A G T T G C A G C C C C G T C C T G A C

FIG. 11

-----Overlap with 32-----

1 MetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrVal
GATGAACCGGGCTGATAAGCCTCGCCTCCGGGGAAACCATGTTCCCCACGCACTACGT
CTACTGGCCGACTATCGGAAGCGGAGGGCCCCCTGGTACAAAGGGGTGCGTGATGCA

61 ProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGln
GCCGGAGAGCGATGCAGCTGCCCGCGTCAGTGCCTACTCAGCAGCCTCACTGTAACCCA
CGGCCTCTCGCTACGTCGACGGCGCAGTGACGGTATGAGTCGTCGGAGTGACATTGGGT

121 LeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySer
GCTCCTGAGGGCGACTGCACCAGTGGATAAGCTCGGAGTGTACCACTCCATGCTCCGGTTC
CGAGGACTCCGCTGACGTGGTCACCTATTGAGCCTCACATGGTGAGGTACGAGGCCAAG

181 TrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeu
CTGGCTAACGGACATCTGGACTGGATATGCGAGGTGTTGAGCGACTTTAACGACCTGGCT
GACCGATTCCCTGTAGACCCCTGACCTATACGCTCCACAACTCGCTGAAATTCTGGACCGA

241 LysAlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyr
AAAAGCTAACGCTCATGCCACAGCTGCCCTGGATCCCCTTGTGTCCTGCCAGCGCGGGTA
TTTCGATTGAGTACGGTGTGACGGACCCCTAGGGGAAACACAGGACGGTCGCGCCCCAT

301 LysGlyValTrpArgVal
TAAGGGGGCTGGCGAGTG
ATTCCCCCAGACCGCTCAC

1 AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIle
 1 GGCTTACATGTCCAAGGCCATGGGATCGATCCTAACATCAGGACCGGGTGAGAACAT
 CCGAATGTTACAGGTTCCGAGTACCCTAGCTAGGATTGTAGTCCTGGCCCCACTCTTGTAA

 61 ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspC1YGLYcys
 TACCACTGGCAGCCCCATCACGTACTCCACCTACGGCAAGTTCCTTGCGACGGCGCCAC
 ATGGTGACCGTCCGGTAGTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCAC

 121 SerGlyGlyAlaTyrAspIleIleCysAspGluCysHisSerThrAspAlaThrSer
 CTCGGGGGGCCTTATGACAATAATTGTCAGGACTGCCACTCCACGGATGCCACATC
 GAGCCCCCCCAGAACTACTGTATTATAAACACTGCTCACGGTGAGGTGCCCTACGGTAG
 IleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValVal
 181 CATCTTGGGCATGGGCACTGGCCTTGACCAAGGAGACTGCGGGGAGACTGGTTGT
 GTAGAACCCGTAGCCGTGACAGGAACACTGGTTCGTCTGACCCCCCGCTCTGACCAAACA
 LeuAlaThrAlaThrProProGlySerValThrValProHISProAlaIleGluGluVal
 241 GCTCGCCACCGCCACCCCTCCGGCTCCGTCACTGTGCCCATCCCCAACATCGAGGAGGT
 CGAGGGGGTGGGGAGGGGGAGGGCAAGTGACACGGGTAGGGTAGGGTTGTAGGTCCCTCA

 301 AlaLeuSerThrThrGlyGluIleProPheTyrolylSAlaIleProLeuGluValIle
 TGCTCTGTCCACCACCGGAGAGATCCCTTTTACGGCAAGGCTATCCCCCTCGAAGTAAT
 ACGAGACAGGTGGCCTCTAGGGAAAAATGCCGTTCCGATAGGGAGGCTTCATA

 361 LysGlyGlyArgHisLeuIlePheCysHisSerLysLysCysAspGluLeuAlaAla
 CAAGGGGGGAGACATCTCATCTTGTCAATTCAAGAACAGTGGGAGCAACTCGCCGC
 GTTCCCCCCTCTGTAGAGTAGAAAGACAGTAAGTTCTCACGGCTGCTTGAGGGCG

 421 -----Overlap with 37b-----
 LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrolylSAlaAspValSerVal
 AAAGCTGTCGTCGCATTGGGCATCAATTGGCGCTACTACCGGGTCTTGACGGTGTCCGT
 TTTCGACCAAGCGTAACCCGTAGTTACGGCACGGATGATGGGCCAGAACTGGCACAGGGCA

 481 -----IleProThr-----
 CATCCCGACCAAG
 GTAGGGCTGGTC

FIG. 12

FIG. 13

CysSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCys
1 ACTGCAGCTCACTGTAACCCAGCTCCTGAGGCAGTCACCAGTGGATAAGCTCGGAGT
TGACGTCGGAGTGACATTGGGTGAGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCA

ThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeu
61 GTACCACTCCATGCTCCGGTTCTGGCTAAGGGACATCTGGACTGGATATGCGAGGTGT
CATGGTGAGGTACGAGGCCAAGGACCGATCCCTGTAGACCCGTACCTATACGCTCCACA.

-----Overlap with 33b-----
SerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGlyIleProPhe
121 TGAGCGACTTTAACCTGGCTAAAGCTAAAGCTCATGCCACAGCTGCCTGGATCCCCT
ACTCGCTGAAATTCTGGACCGATTTCGAGTACGGTGTGACGGACCCCTAGGGGA

ValSerCysGlnArgGlyTyrLysGlyValTrpArgGlyAspGlyIleMetHisThrArg
181 TTGTGTCCCTGCCAGCGCGGGTATAAGGGGGTCTGGCGAGGGGACGGCATCATGCACACTC
AACACAGGACGGTCGCGCCCATATTCCCCCAGACCGCTCCCTGCCGTAGTACGTGTGAG

CysHisCysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArgIleValGly
241 GCTGCCACTGTGGAGCTGAGATCAGTGGACATGTCAAAAACGGGACGATGAGGATCGTCG
CGACGGTGACACCTCGACTCTAGTGACCTGTACAGTTTGCCCTGCTACTCCTAGCAGC

ProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGly
301 GTCCTAGGACCTGCAGGAACATGTGGAGTGGGACCTCCCCATTAATGCCCTACACCACGG
CAGGATCCTGGACGTCCCTGTACACCTCACCCCTGGAAGGGTAATTACGGATGTGGTGCC

ProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGlu
361 GCCCCCTGTACCCCCCTTCTGCGCCGAACATACACGTTGCGCTATGGAGGGTGTCTGCAG
CGGGGACATGGGGGAAAGGACGCGGTTGATGTGCAAGCGCGATACTCCCACAGACGTC

GluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAsp
421 AGGAATATGTGGAGATAAGGCAGGTGGGGACTTCCACTACGTGACGGGTATGACTACTG
TCCTTATACACCTCTATTCCGTCACCCCTGAAGGTGATGCACTGCCCATCTGATGAC

AsnLeuLysCysProCysGlnValProSerProGluPhePheThrGlu
481 ACAATCTCAAATGCCGTGCCAGGTCCCATGCCCGAATTTTACAGAAT
TGTTAGAGTTACGGGCACGGTCCAGGGTAGCGGGCTTAAAAAGTGTCTTA

FIG. 14A

1 AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIle
 1 TGCTTACATGTCCAAGGCTCATGGATCGATCCTAACATCAGGACCGGGGTGAGAACAAAT
 ACGAATGTACAGGTTCCGAGTAGCCTAGGATTGAGTCCTGGCCCCACTCTTGT

 61 ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCys
 61 TACCACTGGCAGCCCCATCACGTAACCTACGGCAAGTCTGCCACGGATGCCACATC
 ATGGTGACCGTCGGGTAGTGCATGAGGTGGATGCCCTAACGGCTGCCAC

 121 SerGlyGlyAlaTyrAspIleIleIleCysAspGluCysHisSerThrAspAlaThrSer
 121 CTCGGGGGGCGCTTATGACATAATAATTGTGACGAGTGCACACTCCACGGATGCCACATC
 GAGCCCCCGCGAACACTGTATTAAACACTGCTACGGTGAGGTGCCTACGGTAG

 181 IleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValVal
 181 CATCTTGGGCATCGGCACTGTCTTGACCAAGCAGAGACTGCGGGCGAGACTGGTTGT
 GTAGAACCCGTAGCCGTGACAGGAACGGTCTGACGCCCGCTGACCAACA

 241 LeuAlaThrAlaThrProProGlySerValThrValProHisProAsnIleGluGluVal
 241 GCTGCCACCGCCACCCCTCCGGCTCCGCACTGTGCCCCATCCAAACATCGAGGGAGGT
 CGAGCGGTTGGCGGTGGGGAGGCCGAGTGCACACGGGGTAGGGTTGAGCTCTCCA

 301 AlaLeuSerThrThrGlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIle
 301 TGCTCTGCCACCACCGGAGAGATCCCTTTACGGCAAGGCTATCCCCCTCGAAGTAAT
 ACGAGACAGGTGGTGGCTCTAGGGAAAATGCCGTTCCGATAGGGGGAGCTTCATTA

 361 LysGlyGlyArgHisLeuIlePheCysHisSerLysLysCysAspGluLeuAlaAla
 361 CAAGGGGGGGAGACATCTCATCTCTGTGATTCAAAGAAGAAGTGCACGAACTCGCCGC
 GTTCCCCCCTCTGTAGAGTAGAACAGTAAGTTCTCACGCTGCTTGAGCGGCG

 421 LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerVal
 421 AAAGCTGGTCGATTGGGCATCAATGCCGTGGCTACTACCGCGGTCTGACGTGTCGT
 TTGACCAAGCTAACCGTAGTTACGGCACCGGATGATGGGCCAGAACACTGCACAGGA

 481 IleProThrSerGlyAspValValValAlaThrAspAlaLeuMetThrGlyTyrThr
 481 CATCCCACCGAGCGCGATGTTGTCGTCGGCAACCGATGCCCTCATGACCGGCTATAC
 TAGGGCTGGTCGCCGCTAACACAGCAGCACCGTTGGCTACGGAGTACTGGCCGATATG

 541 GlyAspPheAspSerValIleAspTyrAsnThrCysValThrGlnThrValAspPheSer
 541 CGGCGACTTCGACTCGGTGATAGACTACAATACGTGTCACCCAGACAGTCGATTTCAG
 GCCGCTGAAGCTGAGCCACTATCTGATTTATGCACACAGTGGGTCTGTCAGCTAAAGTC

 601 LeuAspProThrPheThrIleGluThrIleThrLeuProGlnAspAlaValSerArgThr
 601 CCTTGACCCCTACCTCACCATTGAGACAATCACGCTCCCCCAGGATGCTGTCCTCCGCAC
 GGAACCTGGGATGGAAGTGGTAACCTCTGTTAGTGCAGGGGGTCTACGACAGAGGGCGTG

 661 GlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGly
 661 TCAACGTGGGGCAGGACTGGCAGGGGAAGCCAGGCATCTACAGATTTGTGGCACCGGG
 AGTTGCAAGCCCCCTCTGACCGTCCCCCTCGGTCCGTAGATGTCTAAACACCGTGGCC

 721 GluArgProSerGlyMetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCys
 721 GGAGCGCCCTCCGGCATGTTGACTCGTCCGCTCTGTGAGTGCTATGACGCAGGCTG
 CCTCGCGGGGAGGCCGTAACAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGAC

 781 AlaTrpTyrGluLeuThrProAlaGluThrValArgLeuArgAlaTyrMetAsnThr
 781 TGCTTGGTATGAGCTACGCCCGCCGAGACTACAGTTAGGCTACGAGCGTACATGAACAC
 ACGAACCATACTCGAGTGCAGGGCGCTCTGATGTCAATCCGATGCTCGCATGTACTTG

 841 ProGlyLeuProValCysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeu
 841 CCCGGGGCTTCCCGTGTGCCAGGACCATCTGAAATTGGGAGGGCGTCTTACAGGCT
 GGGCCCCGAAAGGGCACACGGTCTGGTAGAACCTAAACCCCTCCGAGAAATGTCCGGA

FIG. 14B

ThrHisIleAspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAspLeuProTyr
901 CACTCATATAGATGCCACTTCTATCCCAGACAAAGCAGAGTGGGGAGAACCTCTTA
GTGAGTATATCTACGGGTGAAAGATAGGGCTGTTCTCACCCCTCTGGAAAGGAAT
LeuValAlaTyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAsp
961 CCTGGTAGCGTACCAAGCCACCGTGTGCGCTAGGGCTAAGCCCCCTCCCCATCGTGGGA
GGACCATCGCATGGTCGGTGGCACACGCGATCCGAGTTGGGGAGGGGTAGCACCCCT
GlnMetTrpLysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeu
1021 CCAGATGTGGAAAGTGGTATTGCCCTCAAGCCCACCCCTCCATGGGCCAACACCCCTGCT
GGTCTACACCTTACAAACTAACGGAGTTGGGTGGAGGTACCCGGTTGGGACGA
TyrArgLeuGlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIle
1081 ATACAGACTGGCGCTGTTCAAAGAATCACCTGACGCACCCAGTCACCAAATACAT
TATGTCTGACCGCGACAAGTCTTACTTAGTGGACTGCGTGGTCAGTGGTTATGTA
MetThrCysMetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGly
1141 CATGACATGCATGTCGGCCGACCTGGAGGTCGTACGAGCACCTGGTGTGTTGGCGG
GTACTGTACGTACAGCCGGCTGGACCTCCAGCAGTGCTCGTGGACCCACGAGCAACCGCC
ValLeuAlaAlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArg
1201 CGTCCTGGCTGCTTGGCGCTATTGCCGTCAACAGGCTGCGTGGTCATAGTGGCAG
GCAGGACGACGAAACCGGGCGATAACGGACAGTTGTCGACGCACCAAGTATACCCGTC
ValValLeuSerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPhe
1261 GGTCGTCTTGTCCGGGAAGCCGCAATCATACCTGACAGGGAGTCCTTACCGAGAGTT
CCAGCAGAACAGGCCCTCGGCCGTTAGTATGGACTGTCCTCAGGAGATGGCTCTCAA
AspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAla
1321 CGATGAGATGGAAGAGTGTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGC
GCTACTCTACCTCTCACGAGAGTCGTGAATGGCATGTTAGCTCGTCCCTACTACGAGCG
GluGlnPheLysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluVal
1381 CGAGCAGTTCAAGCAGAAGGCCCTCGGCCCTCCTGCAGACCGCGTCCCGTCAGGCAGAGGT
GCTCGTCAAGTTCGTCTCCGGAGGCCGAGCTCTGGCGCAGGGCAGTCCGTCTCCA
IleAlaProAlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMet
1441 TATCGCCCCCTGCTGTCCAGACCAACTGGCAAAACTCGAGACCTTCTGGCGAAGCATAT
ATAGGGGGACGACAGGTCTGGTTGACCGTTTGAGCTCTGGAAGACCCGCTCGTATA
TrpAsnPheIleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnPro
1501 GTGGAACCTCATCAGTGGGATAACAATACTTGGCGGGCTTGTCAACGCTGCCCTGGTAACCC
CACCTGAAGTAGTCACCCATGTTATGAACCGCCCCAACAGTTGCGACGGACCATTGGG
AlaIleAlaSerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
1561 CGCCATTGCTTCATTGATGGTTTACAGCTGCTGACCGACCCACTAACCACTAGCCA
GCGGTAAACGAAGTAACCTACCGAAAATGTCGACGACAGTGGTCGGGTGATTGGTGATCGGT
ThrLeuLeuPheAsnIleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAla
1621 AACCCCTCCTCTTCAACATATTGGGGGGTGGGTGGCTGCCAGCTCGCCGCCGGTGC
TTGGGAGGAGAAGTTGTATAACCCCCCACCACCGACGGGTCGAGCGGGGGCAGCAG
AlaThrAlaPheValGlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGly
1681 CGCTACTGCCCTTGTGGCGCTGGCTAGCTGGCGCCATCGGAGTGTGGACTGGG
GCGATGACGGAAACACCCCGCACCGAACGCGGGTAGCCGTACAACCTGACCC

FIG. 14C

1741 LysValLeuIleAspIleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAla
 1741 GAAGGGTCCCTCATAGACATCCTTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTTTGTGGC
 CTTCCAGGAGTATCTGTAGGAACGTCCCATAACCGCGCCCGCACCGGCCCTCGAGAACACCG
 1801 PheLysIleMetSerGlyGluValProSerThrGluAspLeuValAsnLeuLeuProAla
 1801 ATTCAAGATCATGAGCGGTGAGGTCCCCCTCCACGGAGGACCTGGTCAATCTACTGCCGC
 TAAGTTCTAGTACTCGCCACTCCAGGGGAGGTGCCTCCTGGACCAGTTAGATGACGGCG
 1861 IleLeuSerProGlyAlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHis
 1861 CATCCTCTCGCCCGAGCCCTCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCGCCGGCA
 GTAGGAGAGCGGGGCTCGGGAGCATCAGCCGCACCAAGACACGTCGTTATGACGCGGGCGT
 1921 ValGlyProGlyGluGlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArg
 1921 CGTTGGCCCGGGCGAGGGGGCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCTCCCG
 GCAACCGGGCCCGCTCCCCGTACGTCACCTACTGGCCGACTATCGGAAGCGGAGGGC
 1981 GlyAsnHisValSerProThrHisTyrValProGluSerAspAlaAlaAlaArgValThr
 1981 GGGGAACCATGTTCCCCCACGCACACTACGTGCCGGAGAGCGATGCAGCTGCCGCGTCAC
 CCCCTGGTACAAAGGGGGTGCCTGATGCACGGCCTCTCGCTACGTCACGTCACGGCGCAGTG
 2041 AlaIleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSer
 2041 TGCCATACTCAGCAGCCTCACTGTAACCCAGCTCTGAGGCAGTCACAGTGGATAAG
 ACGGTATGAGTCGTGGAGTGACATTGGGTCGAGGACTCCGCTGACGTGGTCACCTATT
 2101 SerGluCysThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCys
 2101 CTCGGAGTGTACCACCTCCATGCTCCGGTTCTGGCTAAGGGACATCTGGGACTGGATATG *
 GAGCCTCACATGGTGAGGTACGAGGCCAAGGACCGATTCCCTGTAGACCCTGACCTATAC
 2161 GluValLeuSerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGly
 2161 CGAGGTGTTGAGCGACTTTAACGCTGGCTAAAGCTAACGCTCATGCCACAGCTGCTGG
 GCTCCACAACCTCGTCAAATTCTGGACCGATTTCGATTGAGTACGGTGTGACCGGAC
 2221 IleProPheValSerCysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMet
 2221 GATCCCCTTGTGTCTGCCAGCGCGGGTATAAGGGGGTCTGGCGAGTGACGGCATCAT
 CTAGGGGAAACACAGGACGGTCGCGCCCATATTCCCCCAGACCGCTCACCTGCCGTAGTA
 2281 HisThrArgCysHisCysGlyAlaGluIleThrGlyValLysAsnGlyThrMetArg
 2281 GCACACTCGCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAAAAACGGGACGATGAG
 CGTGTGAGCGACGGTACACCTCGACTCTAGTGACCTGTACAGTTTGCCCTGCTACTC
 2341 IleValGlyProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyr
 2341 GATCGTCGGTCTAGGACCTGCAGGAACATGTGGAGTGGGACCTTCCCCATTAAATGCC
 TAATGCAAGCCAGGATCTGGACGTCCTGTACACCTCACCTGGAAAGGGTAATTACGGAT
 2401 ThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgVal
 2401 CACCACGGGCCCTGTACCCCCCTTCCTGCGCCGAACATACGTTCGCGCTATGGAGGGT
 GTGGTGCCGGGGACATGGGGGAAAGGACGCGGCTTGTACGTCAGCGCGATACCTCCA
 2461 SerAlaGluGluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMet
 2461 GTCTGCAGAGGAATATGTGGAGATAAGGCAGGTGGGGGACTTCCACTACGTGACGGGTAT
 CAGACGTCTCTTATACACCTCTATTCCGTCCACCCCTGAAGGTGATGCAAGCGCGATACCTCCA
 2521 ThrThrAspAsnLeuLysCysProCysGlnValProSerProGluPhePheThrGlu
 2521 GACTACTGACAATCTAAATGCCGTGCCAGGTCCCCATCGCCCCGAATTTCACAGAAAT
 CTGATGACTGTTAGAGTTACGGGCACGGTCAAGGTAGCGGGCTTAAAAAGTGTCTTA

FIG. 15

1 AlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPheThr
 1 GGCGGTGGACTTATCCCTGTGGAGAACCTAGAGACAAACCATGAGGTCCCCGGTGTCAC
 CCGCCACCTGAAATAGGGACACCTTTGGATCTCTGGTACTCCAGGGGCCACAAGTG

 61 AspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaPro
 61 GGATAACTCCTCTCCACCAGTAGTGCCTCAGAGCTTCAGGTGGCTCACCTCCATGCTCC
 CCTATTGAGGAGAGGTGGTATCACGGGTCTGAAGGTCCACCGAGTGGAGGTACGAGG

 121 ThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysVal
 121 CACAGGCAGCGGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGT
 GTGTCCGTCGCCGTTTCGTGGTCCAGGGCGACGTATACTCGAGTCCCAGTATTCCA

 181 LeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAla
 181 GCTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTGGTGCCTACATGTCCAAGGC
 CGATCATGAGTTGGGAGACAAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCG

 -----Overlap with 40b-----
 241 HisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIle
 241 TCATGGGATCGATCTAACATCAGGACCGGGGTGAGAACAAATTACCACTGGCAGCCCCAT
 AGTACCCTAGCTAGGATTGTAGTCCTGGCCCCACTCTTGTAAATGGTGACCGTCGGGTA

 301 ThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAsp
 301 CACGTACTCCACCTACGGCAAGTTCTGCCGACGGCGGGTGCCTGGGGCGCTTATGA
 GTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCGAATACT

 361 IleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThr
 361 CATAATAATTGTGACCGAGTGCACACTCCACGGATGCCACATCCATCTGGCATTGGCAC
 GTATTATTAACACTGCTCACGGTGGAGGTGCCTACGGTGTAGGTAGAACCCGTAACCGTG

 421 ValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrPro
 421 TGTCTTGACCAAGCAGAGACTGCGGGGCGAGACTGGTTGTGCTGCCACCGCCACCC
 ACAGGAACCTGGTTGCTCTGACGCCCGCTCTGACCAACACGAGCGGTGGCGGTGGG

 481 ProGlySerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGly
 481 TCCGGGCTCGTCACTGTGCCCATCCACATCGAGGGAGGTGCTCTGTCACCCACCGG
 AGGCCCGAGGGCAGTGACACGGGTAGGGTTGTAGTCCTCCAACGAGACAGGTGGTGGCC

 541 GluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeu
 541 AGAGATCCCTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCT
 TCTCTAGGGAAAAATGCCGTTCGATAGGGGGAGCTTCATTAGTCCCCCTCTGTAGA

 601 IlePheCysHisSerLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGly
 601 CATCTCTGTCATTCAAAGAAGAAGTGCACGAACTCGCCGAAAGCTGGTCGCATTGGG
 GTAGAAGACAGTAAGTTCTTCACTGCTGCTTGAGCGGGCTTCGACCAAGCGTAACCC

 661 IleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAsp
 661 CATCAATGCCGTGGCTACTACCGCGGTCTTGACGTGTCGTCATCCGACCGAGCGCGA
 GTAGTTACGGCACCGGATGATGGCGCCAGAACTGCACAGGCAGTAGGGCTGGTCGCCGCT

 721 ValValValValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerVal
 721 TGTTGTCGTGTCGGCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGT
 ACAACAGCAGCACCGGTTGGCTACGGGAGTACTGGCCGATATGGCGCTGAAGCTGAGCCA

 781 IleAspCysAsnThrCys
 781 GATAGACTGCAATACTGTGT
 CTATCTGACGTTATGCACAC

FIG. 16

1 ProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHisAlaAspValIlePro
 1 CTCCCCTGCACTTGCGGCTCCTCGGACCTTACCTGGTCACGAGGCACGCCGATGTCAATTG
 GAGGGACGTGAACGCCGAGGAGCCTGGAAATGGACCAGTGTCCGTGCGGCTACAGTAAG
 61 ValArgArgArgGlyAspSerArgGlySerLeuLeuSerProArgProIleSerTyrLeu
 61 CCGTGCACGCCGGCGGGGTGATAGCAGGGGCAGCCTGCTGTCGCCCCGGCCCATTCTACT
 GGCACGCCGCCACTATCGTCCCCGTCGGACGACAGCAGGGCCGGTAAAGGATGA
 121 LysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePheArg
 121 TGAAAGGCTCCTCGGGGGTCCGCTGGTGTGCCCCGGGGCACGCCGTGGCATATTAA
 ACTTTCCGAGGAGCCCCCAGGCGACAACACGGGGCGCCCCGTGCGGCACCGTATAAAAT
 181 AlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIleProValGluAsnLeu
 181 GGGCCGCGGTGTGCAACCGTGGAGTGGCTAAGGCGGGTGGACTTTATCCCTGTGGAGAAC..
 CCCGGCGCACACGTGGCACCTCACCGATTCCGCCACCTGAAATAGGGACACCTTTGG
 33C-----Overlap with
 241 GluThrThrMetArgSerProValPheThrAspAsnSer
 241 TAGAGACAACCATGAGGTCCCCGGTGGTACCGATAACTCCTC
 ATCTCTGTTGGTACTCCAGGGGCCACAAGTGCCTATTGAGGAG

FIG. 17

1 GlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGly
 1 GGGGTGGAGGTTGCTGGCGCCCATCACGGCGTACGCCAGCAGACAAGGGGCCTCTAGG
 CCCCACCTCCAACGACCGCGGGTAGTGCCGCATGCGGGTCGTGTTCCCCGGAGGATCC
 61 CysIleIleThrSerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIle
 61 GTGCATAATCACCAAGGCTAACTGGCCGGACAAAAACCAAGTGGAGGGTGAGGTCCAGAT
 CACGTATTAGTGGTCGGATTGACCGGCCCTGTTGGTACCTCCCACCTCAGGTCTA
 121 ValSerThrAlaAlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThrVal
 121 TGTGTCAACTGCTGCCAACCTTCCTGGCAACGTGCATCAATGGGTGTGCTGGACTGT
 ACACAGTTGACGACGGGTTGGAAAGGACCGTTGCACGTAGTTACCCCACACGACCTGACA
 181 TyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyProValIleGlnMetTyr
 181 CTACCACGGGGCCGGAACGAGGACCATCGCGTACCCAAGGGTCCTGTACATCCAGATGTA
 GATGGTGCCTGGCTGTAGCGCAGTGGTTCCAGGACAGTAGGTCTACAT
 241 ThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeuThr
 241 TACCAATGTAGACCAAGACCTTGTGGCTGGCCCGCTCCGCAAGGTAGCCGCTCATTGAC
 ATGGTTACATCTGGTTCTGGAACACCCGACCGGGCGAGGCAGTCCATCGCGAGTAAC
 -----Overlap with 8h-----
 301 ProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHis
 301 ACCCTGCACTTGCGGCTCCTCGGACCTTACCTGGTCACGAGGCACG
 TGGGACGTGAACGCCGAGGAGCCTGGAAATGGACCAGTGTCCGTGC

FIG. 18

AsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeu
1 GAACATGTGGAGTGGGACCTCCCCATTAAATGCCTACACCACGGGCCCTGTACCCCCCT
CTTGTACACCTCACCTGGAAGGGTAATTACGGATGTGGTCCCCGGGACATGGGGGA
-----Overlap with 25c-----
ProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIle
61 TCCTGCGCGCGAACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATACGTGGAGAT
AGGACGCGCGCTTGATGTCAAGCGCGATAACCTCCCACAGACGTCTCCTTATGCACCTCTA

ArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysPro
121 AAGGCAGGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTAAATGCC
TTCCGTCCACCCCTGAAGGTGATGCACTGCCATACTGATGACTGTTAGAATTACGGG

CysGlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPhe
181 GTGCCAGGTCCCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTAGAGTAGGACTCCACGA
CACGGTCCAGGGTAGCGGGCTTAAAAAGTGTCTAACCTGCCACGCGGATGTATCAA

AlaProProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGlu
241 TGCGCCCCCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTAGAGTAGGACTCCACGA
ACGCGGGGGGACGTTGGGAACGACGCCCTCCATAGTAAGTCTCATCCTGAGGTG

TyrProValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSer
301 ATACCCGGTAGGGTCGCAATTACCTTGCGAGCCCAGACCGGACGTGGCCGTGTTGACGTC
TATGGGCCATCCCAGCGTTAATGGAACGCTCGGGCTTGGCCTGCACCGCACACTGCAG

MetLeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGly
361 CATGCTCACTGATCCCTCCCATAAACAGCAGAGGCCGGCCGGCGAAGGTTGGCGAGGGG
GTACGAGTGACTAGGGAGGGTATATTGTCGTCTCCGGCCGGCCCTCCAAACCGCTCCCC

SerProProSerValAlaSerSerAlaSerGlnLeuSerAlaProSerLeuLysAla
421 ATCACCCCCCTCTGGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGC
TAGTGGGGGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCAGGTAGAGAGTTCCG

ThrCysThrAlaAsnHisAspSerProAsp
481 AACTTGCACCGCTAACCATGACTCCCTGAT
TTGAACGTGGCGATTGGTACTGAGGGACTA

FIG. 19

-----Overlap with 14c-----

1 SerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCysThrAlaAspHis
1 AGCTCCTCGGCTAGCCAGCTATCCGCTCATCTCTCAAGGCAACTTGCACCGCTAACCAT
TCGAGGAGGCCATCGTCGATAGGCAGGGTAGAGAGTTCCGTTGAACGTGGCGATTGGTA

61 AspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArgGlnGluMetGlyGlu
61 GACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCTATGGAGGCAGGAGATGGCGGC
CTGAGGGGACTACGACTCGAGTATCTCCGTTGGAGGATACTCCGTCTCACCCGCCG

121 AsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSerPheAspProLeu
121 AACATCACCAAGGGTTGAGTCAGAAAACAAGTGGTATTCTGGACTCCTCGATCCGCTT
TTGTAGTGGTCCAACTCAGTCTTGTTTACCACTAAGACCTGAGGAAGCTAGGCAGAA

181 ValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeuArgLysSerArg
181 GTGGCGGAGGAGGACGAGCAGGAGATCTCCGTACCCGCAGAAAATCCTGCGGAAGTCTCGG
CACCGCCTCCTCGCTCGCCCTCTAGAGGCATGGCGTCTTAGGACGCCAGAGCC

241 ArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnProProLeuValGlu
241 AGATTGCCCCAGGCCCTGCCCCTGGCGCGCCGACTATAACCCCCCGCTAGTGGAG
TCTAACGGGTCCCGGGACGGCAAACCCGCGCCGGCCTGATATTGGGGGCGATCACCTC

301 ThrTrpLysLysProAspTyrGluProProValValHisGlyCysProLeuProProPro
301 ACGTGGAAAAAAGCCGACTACGAACCACCTGTGGTCATGGCTGTCCGCTTCCACCTCCA
TGCACCTTTTCGGGCTGATGCTTGGACACCAGGTACCGACAGGCAGGGTGGAGG

361 LysSerProProValPro
361 AAGTCCCCCTCGTGGCG
TTCAGGGGAGGACACGGC

FIG. 20

-----ValTrpAlaArgProAspTyrAsnProProLeuValGluThrTrpLysLysProAspTyr-----

1 CGTTTGGGCGCGGCCGGACTATAACCCCCCGCTAGTGGAGACGTGGAAAAAAACCGACTA
GCAAACCCCGCGCCGGCCTGATATTGGGGGCGATCACCTCTGCACCTTTTGGGCTGAT

-----Overlap with 8f-----

61 GluProProValValHisGlyCysProLeuProProLysSerProProValProPro
61 CGAACCACTGTGGTCCATGGCTGCCGCTTCCACCTCAAAGTCCCTCTGTGCCTCC
GCTTGGTGGACACCAGGTACCGACGGCGAAGGTGGAGGTTCAAGGGGAGGACACGGAGG

121 ProArgLysLysArgThrValValLeuThrGluSerThrLeuSerThrAlaLeuAlaGlu
121 GCCTCGGAAGAAGCGGACGGTGGTCTCACTGAATCAAACCTATCTACTGCCCTGGCGA
CGGAGCCTTCTCGCTGCCACAGGAGTGAATTAGGGATAGATGACGGAACCGGCT

181 LeuAlaThrArgSerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThr
181 GCTCGCCACCAAGAAGCTTGGCAGCTCCTCAACTCCGGCATTACGGGGGACAATACGAC
CGAGCGGTGGTCTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCGCTGTTATGCTG

241 ThrSerSerGluProAlaProSerGlyCysProProAspSerAspAlaGluSerPhe
241 AACATCCTCTGAGCCGCCCTCTGGCTGCCCTGGACTCCGACGCTGAGTCCTTGC
TTGTAGGAGACTCGGGCGGGGAAGACCGACGGGGGCTGAGGCTGCGACTCAGGAAACG

FIG. 21

-----Overlap with 33f-----

1 AlaSerArgSerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThrThr
GCCTCCAGAAGCTTGGCAGCTCCTCAACTTCCGGCATTACGGGCACAAATACGACAACA
CGGAGGTCTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCCGTGTATGCTGTTGT

61 SerSerGluProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSer
TCCTCTGAGCCCCGCCCTCTGGCTGCCCGCGACTCCGACGCTGAGTCTATTCCCTCC
AGGAGACTCGGGCGGGGAAGACCGACGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGG

121 MetProProLeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThr
ATGCCCGCCCTGGAGGGGGAGCCTGGGATCCGGATCTTAGCGACGGGTATGGTCAACG
TACGGGGGGGACCTCCCCCTGGACCCCTAGGCCTAGAACGCTGCCCAGTACCAAGTGC

181 ValSerSerGluAlaAsnAlaAspValValCysCysSerMetSerTyrSerTrpThr
GTCAGTAGTGAGGCCAACCGCGAGGATGTCGTGTGCTCAATGTCTTACTCTGGACA
CAGTCATCACTCCGGTTGCGCCTCTACAGCACACGACGAGTTACAGAACGAGTGT

241 GlyAlaLeuValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSer
GGCGCACTCGTCACCCCGTGC CGCGCGGAAGAACAGAAAATGCCCATCAATGCACTAACG
CCGCGTGAGCAGTGGGCA CGCGCGCCTTCTGTCTTGACGGTAGTTACGTGATTG

301 AsnSerLeuLeuArgHisHisAsnLeuValTyrSerThrThrSerArgSer
AACTCGTTGCTACGTCAACCACATTGGTAGAGTGAGGAGAACGCTCACGCAGTG
TTGAGCAACGATGCAGTGGTTAACACATAAGGTGGTAGTGCAC

FIG. 22

GlyThrTyrValTyrAsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArg

1 GGCACCTATGTTATAACCATCTGACTCCTCTCGGGACTGGCGCACACGGCTTGC
CCGTGGATACAAATATTGGTAGAGTGAGGAGAACGCTGACCGCTGTTGCCGAACGCT

61 AspLeuAlaValAlaValGluProValValPheSerGlnMetGluThrLysLeuIleThr
GATCTGGCCGTGGCTGTAGAGCCAGTCGTCTCTCCAAATGGAGACCAAGCTCATCACG
CTAGACCGGCACCGACATCTCGGTCAAGCAGAACAGGGTTTACCTCTGGTTGAGTAGTGC

121 TrpGlyAlaAspThrAlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArg
TGGGGGGCAGATACCGCCGCGTGCAGTGCATCATCAACGGCTTGCCTGTTCCGCCGC
ACCCCCCGTCTATGGCGCGCACGCCACTGTAGTAGTTGCCAACGGAACAAAGGCGGGCG

181 ArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeu
AGGGGCCGGGAGATACTGCTCGGCCAGCCGATGGAATGGTCTCCAAGGGTTGGAGGTTG
TCCCCGGCCCTCTATGACGAGCCCGTGGCTACCTTACCAAGAGGTTCCAACCTCCAAC

241 LeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThr
CTGGCGCCCCATCACGGCGTACGCCAGCAGAACAGGGGCCCTCTAGGGTGCATAATACC
GACCGCGGGTAGTGCACGCCATGCCGGTCTGTTCCCCGGAGGATCCCACGTATTAGTGG

-----Overlap with 7e-----

301 SerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIleValSerThrAla
AGCCTAACTGGCCGGACAAAAACCAAGTGGAGGGTGAGGTCCAGATTGTGCAACTGCT
TCGGATTGACCGGCCCTGTTTGGTTACCTCCACTCCAGGTCTAACACAGTTGACGA

361 AlaGinThrPheLeuAlaThrCysIleAsnGlyValCysTrp
GCCCAAACCTTCCTGGCAACGTGCATCAATGGGGTGTGCTGG
CGGGTTGGAAGGACCGTTGCACGTAGTTACCCACACGACC

FIG. 23

GlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLysArgTyr
1 GGCGGTGTGTTCTCGTCGGGTTGATGGCGCTGACTCTGTCACCATATTACAAGCGCTAT
CCGCCACAACAAGAGCAGCCCAACTACCGCAGTGAAGACAGTGGTATAATGTCGCGATA

IleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGluAlaGlnLeuHis
61 ATCAGCTGGTCTTGTTGGCTTCAGTATTTCTGACCAGAGTGGAAAGCGCAACTGCAC
TAGTCGACCACGAACACCACCGAAGTCATAAAAGACTGGTCTACCTCGCGTTGACGTG

ValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIleLeuLeuMetCys
121 GTGTGGATTCCCCCTCAACGTCCGAGGGGGCGCGACGCCGTATCTTACTCATGTGT
CACACCTAACGGGGGGAGTTGCAGGCTCCCCCGCGCTGCAGGCTAGAATGAGTACACA

AlaValHisProThrLeuValPheAspIleThrLysLeuLeuLeuAlaValPheGlyPro
181 CCTGTACACCCGACTCTGGTATTTGACATCACCAAATTGCTGCTGGCGTCTCGGACCC
CGACATGTGGGCTGAGACCATAAAACTGTAGTGGTTAACGACGACCGGCAGAACGCTGG

LeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArgValGlnGlyLeu
241 CTTGGATTCTCAAGCCAGTTGCTTAAAGTACCCACTTTGCGCGTCCAAGGCCTT
GAAACCTAACGAGTCGGTAAACGAATTGATGGGATGAAACACGCCAGGTTCCGGAA

LeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrValGlnMetValIle
301 CTCCGGTTCTGCGCGTTAGCGCGGAAGATGATCGGAGGCCATTACGTGCAAATGGTCATC
GAGGCCAAGACGCCAATCGCCCTTACTAGCCTCCGGTAATGCACGTTACCACTAG

IleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThrProLeuArgAsp
361 ATTAAGTTAGGGCGCTTACTGGCACCTATGTTATAACCATCTCACTCCTCTCGGGAC
TAATTCAATCCCCCGAATGACCGTGGATACAAATATTGGTAGAGTGAGGAGAACCCCTG

-----Overlap with 7f-----
TrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPheSerGln
421 TGGGCGCACACCGCTTGCAGAGATCTGGCGTGGCTGTAGAGCCAGTCGTCTTCTCCCAA
ACCCCGGTGTTGCCAACGCTCTAGACCGGCACCGACATCTGGTCAGCAGAACGGGTT

MetGluThrLysLeuIleThrTrpGly
481 ATGGAGACCAAGCTCATCACGTGGGGGC
TACCTCTGGTTCGAGTAGTGCACCCCCCG

FIG. 24

1 GluTyrValValLeuLeuLeuPheLeuLeuLeuAlaAspAlaArgValCysSerCysLeuTrp
 GGGAGTACGTCTCGTCTCCCTGTTCTCTGCTTGAGACGCGCGCGTCTGCTCCTGCTTG
 CCTCATGCAGCAAGAGGAAGACGAACGTCTGCGCGCGCAGACGAGGACGAACA

 61 MetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAla
 GGATGATGCTACTCATATCCCCAAGCGGAGGCCGTTGGAGAACCTCGTAATACTTAATG
 CCTACTACGATGAGTATAGGGTCGCCTCCGCCAAACCTTTGGAGCATTATGAATTAC

 121 AlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrp
 CAGCATCCCTGGCCGGACGCAACGGTCTTGTATCCTCCTCGTGTCTTGCTTTGCAT
 GTCGTAGGGACCGGCCCTGCGTGCAGAACATAGGAAGGAGCACAAAGAACGAAACGTA

 181 TyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrpProLeu
 GGTATTGAAGGGTAAGTGGGTGCCCGGAGCGGTCTACACCTCTACGGGATGTGGCCTC
 CCATAAAACTCCCATTCACCCACGGGCCCGCCAGATGTGGAAAGATGCCCTACACCGGAG

 241 LeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluValAlaAla
 TCCTCTGCTCCTGTTGGCGTTGGCCCAAGCGGGCGTACGCGCTGGACACGGAGGTGGCCG
 AGGAGGACGAGGACAAACGCAACGGGTCGCCGCATGCGCACCTGTGCCCTCACCGGAG

 -----Overlap with 11b-----
 301 SerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLys
 CGTCGTGGCGGTGTTCTCGTGGGTTGACTCTGTCACCATATTACA
 GCAGCACACCGCCACAACAGAGCAGCCAACTACCGCGACTGAGACAGTGGTATAATGT

 361 ArgTyrIleSerTrpCysLeuTrpTrpLeuGln
 AGCGCTATATCAGCTGGTGTTGGCTCAGAA
 TCGCGATATAGTCGACCACGAACACCACCGAAGTCT

FIG. 25

1 ProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSerMetProPro
 CCAGCCCCCTCTGGCTGCCCGACTCCGACGCTGAGTCCTATTCCCATGCCCGGG
 GGTGCGGGAAAGACCGACGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGG

 61 LeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSer
 CTGGAGGGGGAGCCTGGGATCCGGATCTTAGCGACGGGTATGGTCAACAGTCAGTAGT
 GACCTCCCCCTGGACCCCTAGGCCTAGAAATCGTGCCTAGGTACCGAGTTGTCAGTCATCA

 -----Overlap with 33g-----
 121 GluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeu
 GAGGCCAACCGGGAGGGATGTCGTGCTGCTCAATGTCCTACTCTGGACAGGCGCACTC
 CTCCGGTTGCGCTCCTACAGCACACGACGAGTTACAGGATGAGAACCTGTCAGTCAG

 181 ValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeu
 GTCACCCCGTGCAGCGCCGCGGAAGAACAGAAACTGCCCATCAATGCACTGAGCAACTCGTT
 CAGTGGGGCACGCGGCCCTTGTCTTGTACGGTAGTTACGTGACTCGTTGAGCAAC

 241 LeuArgHisHisAsnLeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLys
 CTACGTACCAACAAATTGGTGTATTCCACCACTCACGCAGTGCTTGCCAAAGGCAGAAG
 GATGCAGTGGTAAACACATAAGGTGGTAGTGCACGAGTTCCGTCAGAACGGTTCCGTC

 301 LysValThrPheAspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGly
 AAAGTCACATTTGACAGACTGCAAGTTCTGGACAGCCATTACCAAGGACGTACTCAAGGAG
 TTTCAGTGTAAACTGTCTGACGTTCAAGACCTGTGGTAATGGTCCCTGCATGAGTTCTC

 361 ValLysAlaAlaAlaSerLysValLysAlaAsnPhe
 GTTAAAGCAGCGCGTAAAAAGTGAAGGCTAACTTC
 CAATTTCGCGCCGAGTTTCACTTCCGATTGAAG

FIG. 26A

1 GluTyrValValLeuLeuLeuPheLeuLeuLeuAlaAspAlaArgValCysSerCysLeuTrp
1 GGGAGTACGTCGTTCTCTGTTCTCTGCTTGAGACGCGCGGTCTGCTCTGCTTG
1 CCTCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCGCGCAGACGAGGACGAACA
61 MetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAla
61 GGATGATGCTACTCATATCCCAGCGGAGGCCGTTGGAGAACCTCGTAATACTTAATG
61 CCTACTACGATGAGTATAGGGTTCGCCTCCGCCGAAACCTCTGGAGCATTATGAATTAC
121 AlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrp
121 CAGCATCCCCGGCGGGACGCACGGTCTTGTATCCTCCTCGTGTCTCTGCTTTGCAT
121 GTCTGTAGGGACCGGCCCTGCGTGCAGAACATAGGAAGGAGCACAAAGAACGAAACGTA
181 TyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrpProLeu
181 GGTATTGAAAGGGTAAGTGGGTGCCCGGAGCGGGTCTACACCTTCTACGGGATGTGGCCTC
181 CCATAAACTTCCCATTCAACCCACGGGCCTGCCAGATGTGGAAAGATGCCCTACACCGGAG
241 LeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluValAlaAla
241 TCTCTGCTCCTGTTGGCGTGGCCAGCGCGTACGCGCTGGACACGGAGGTGCCG
241 AGGAGGACGAGGACAACCGCAACGGGGTCGCCCCATGCGCAGACCTGTGCCCTCACCGGC
301 SerCysGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLys
301 CGTCGTGTGGCGGTGTTGTCGTCGGGTTGATGGCGCTGACTCTGTACCATATTACA
301 GCAGCACACCGCCACAACAAGAGCAGCCCCACTACCGCGACTGAGACAGTGGTATAATGT
361 ArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGluAlaGln
361 AGCGCTATATCAGCTGGTGCTTGTTGGCTCAGTATTTCTGACCAGAGTGGAAAGC
361 TCGCGATATAGTCGACCAACACCACCGAAGTCATAAAAGACTGGTCTCACCTCGCG
421 LeuHisValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIleLeuLeu
421 AACTGCACGTGTGGATTCCCCCCTCAACGTCCGAGGGGGGCGCAGCAGCGTCACTTAC
421 TTGACGTGCACACCTAAGGGGGGAGTTGCAGGCTCCCCCGCGCTGCGGCAGTAGAATG
481 MetCysAlaValHisProThrLeuValPheAspIleThrLysLeuLeuLeuAlaValPhe
481 TCATGTGTGCTGTACACCCGACTCTGGTATTTGACATCACCAAATTGCTGCTGGCGTCT
481 AGTACACACGACATGTGGCTGAGACCATAACTGTAGTGGTTAACGACGACCGGCAGA
541 GlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArgValGln
541 TCGGACCCCTTGGATTCTCAAGCCAGTTGCTAAAGTACCCACTTTGTGCGCGTCC
541 AGCCTGGGAAACCTAAGAAGTTCGGTCAAACGAATTGATGGGATGAAACACGCGCAGG
601 GlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrValGlnMet
601 AAGGCCTCTCCGGTTCTGCGCGTTAGCGCGGAAGATGATCGGAGGCCATTACGTGCAAA
601 TTCCGGAAAGAGGCCAAGACGCGCAATCGGCCCTTACTAGCCTCCGGTAATGCACGTTT
661 ValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThrProLeu
661 TGTCATCATTAAGTTAGGGGCCTTACTGGCACCTATGTTATAACCATCTCACTCCTC
661 ACCAGTAGTAATTCAATCCCCCGGAATGACCGTGGATACAAATATTGGTAGAGTGAGGAG
721 ArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPhe
721 TTGGGACTGGCGCACACGGCTTGCAGAGATCTGGCGTGGCTGAGAGCCAGTCGTCT
721 AAGCCCTGACCCGCGTGTGCCAACGCTCTAGACCGGCACCGACATCTCGGTAGCAGA
781 SerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThrAlaAlaCysGlyAspIle
781 TCTCCCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATACCGCCGCGTGCAGGAGA
781 AGAGGGTTTACCTCTGGTCGAGTAGTGCAACCCCCCGTCAATGGCGCGCACGCCACTG
841 IleAsnGlyLeuProValSerAlaArgArgGlyArgGluIleLeuLeuGlyProAlaAsp
841 TCATCAACGGCTTGCCTGTTCCGCCCCGAGGGGGGGAGATACTGCTGGGCCAGCCG
841 AGTAGTTGCCAACGGACAAAGGCAGGGCGTCCCCGGCCCTATGACGAGCCCAGGTCGGC
901 GlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGlnGlnThr
901 ATGGAATGGTCTCCAAGGGGTGGAGGTTGCTGGCGCCATCACGGCGTACGCCAGCAGA
901 TACCTTACCAAGAGGTTCCCCACCTCAACGACCGCGGGTAGTGCGCATGCGGGTGTCT

FIG. 26B

ArgGlyLeuLeuGlyCysIleIleThrSerLeuThrGlyArgAspLysAsnGlnValGlu
961 CAAGGGGCCCTCTAGGGTGCATAATCACCAAGCCTAACTGGCCGGGACAAAAAACCAAGTGG
GTTCCCCGGAGGATCCCACGTATTAGTGGTCGGATTGACC GGCCCTGTTTGTTTGGTCACCG

GlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeuAlaThrCysIleAsnGly
1021 AGGGT GAGGTCCAGATTGTGTCAACTGCTGCCAACCTTCCTGGCAACGTGCATCAATG
TCCCAC TCCAGGTCTAACACAGTTGACGACGGGTTGGAAGGACCGTTGCACGTAGTTAC

ValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyPro
1081 GGGTGTGCTGGACTGTCTACACAGGGGCCGAACGAGGACCATCGCGTACCCAAAGGGTC
CCCACACGACCTGACAGATGGTGC CCGCTTGCTCCTGGTAGCGCAGTGGGTTCCCAG

ValIleGlnMetTyrThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGly
1141 CTGTCATCCAGATGTATACCAATGTAGACCAAGACCTTGTGGGCTGGCCCGCTCCGCAAG
GACAGTAGGTCTACATATGGTTACATCTGGTTCTGGAACACCCGACCGGGCGAGGCGTTC

SerArgSerLeuThrProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHis
1201 GTAGCCGCTCATTGACACCCCTGC ACTTGC GGCTCCTCGGACCTTACCTGGTCACGAGGC
CATCGGCAGTA ACTGTGGGACGTGAACGCCGAGGAGCCTGGAAATGGACCAGTGCTCCG

AlaAspValIleProValArgArgArgGlyAspSerArgGlySerLeuLeuSerProArg
1261 ACGCCGATGTCATTCCCGTGC GCCGGCGGGGTGATAGCAGGGGCAGCCTGCTGTCGCC
TGC GGCTACAGTAAGGGCACGCCGCCCCACTATCGTCCCCGTCGGACGACAGCGGGG

ProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAla
1321 GGCCCATTTCTACTTGAAAGGCTCTGGGGGGTCCGCTGTTGTGCCCGCGGGGACAG
CGGGTAAAGGATGAACCTTCCAGGAGCCCCCCAGCGACAACACGGGGCGCCCCGTGC

ValGlyIlePheArgAlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIle
1381 CGTGGGCATATTAAGGGCCGGTGTGACCCGTGGAGTGGCTAAGGCGGTGGACTTTA
GGCACCCGTATAAATCCGGCGCCACACGTGGCACCTCACCGATTCCGCCACCTGAAAT

ProValGluAsnLeuGluThrThrMetArgSerProValPheThrAspAsnSerSerPro
1441 TCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTCCTCTC
AGGGACACCTTGGATCTCTGGTACTCCAGGGCCACAAGTGCCTATTGAGGAGAG

ProValValProGlnSerPheGlnValAlaHisLeuHisAlaProThrGlySerGlyLys
1501 CACCA GTAGTGCC CAGAGCTTCCAGGTGGCTCACCTCATGCTCCACAGGCAGCGGCA
GTGGTCATCACGGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGTCGCCGT

SerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeuAsnPro
1561 AAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACTCAACC
TTCTGTGGTCCAGGGCCGACGTATACGTCGAGTCCGATATTCCACGATCATGAGTTGG

SerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIleAspPro
1621 CCTCTGTGCTGCAACACTGGGCTTGGTGTTACATGTCAAAGGCTATGGGATCGATC
GGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCCTAGCTAG

AsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSerThrTyr
1681 CTAACATCAGGACCGGGGTGAGAACAAATTACCACTGGCAGCCCCATCACGTACTCCACCT
GATTGTAGTCCTGGCCCCACTCTGTAAATGGTGACCGTCGGGGTAGTGCATGAGGTGGA

GlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIleCysAsp
1741 ACGGCAAGTTCTTGGCGACGGCGGGTGCTCGGGGGCGTTATGACATAATAATTGTG
TGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCGAATACTGTATTATAACAC

GluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAspGlnAla
1801 ACGAGTGC CACTCCACGGATGCCACATCCATCTGGCATCGGC ACTGTCCTTGACCAAG
TGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCGTAGCCGTGACAGGA ACTGGTTC

GluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySerValThr
1861 CAGAGACTGCGGGGGCGAGACTGGTTGTGCTGCCACCGCCACCCCTCCGGGCTCCGTCA
GTCTCTGACGCCCGCTCTGACCAACACGAGCGGGTGGCGGTGGGGAGGCCCCGAGGCACT

ValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIleProPheTyr
1921 CTGTGCCCATCCAAACATCGAGGAGGTGCTCTGTCACCACCGGAGAGATCCCTTTT
GACACGGGGTAGGGTTGTAGCTCTCCAACGAGACAGGTGGTGGCCTCTAGGGAAAAAA

FIG. 26C

1981 GlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCysHisSer
 ACGGCAAGGCTATCCCCCTGAAGTAATCAAGGGGGGAGACATCTCATCTTCTGTCAATTGCCGTTCCGATAGGGGAGCTTCATTAGTCCCCCTCTGTAGAGTAGAACAGTAA

2041 LysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaValAla
 CAAAGAAGAAGTGCAGACAACTGCCGAAAGCTGGTCGCATTGGGCATCAATGCCGTGG
 GTTTCTTCTCACGCTGCTTGAGCGCGTTCGACCAGCGTAACCGTAGTTACGGCAC

2101 TyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValValAla
 CCTACTACCGCGGTCTTGACGTGTCGTACATCCCACCGAGCGGGCATGTTGTCGTGG
 GGATGATGGCGCCAGAACCTGCACAGGCAGTAGGGCTGGTCGCCGCTACAACAGCAGCAC

2161 ThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsnThr
 CAACCGATGCCCTCATGACCGGCTATAACCGGCAGCTCGACTCGGTGATAAGACTGCAATA
 GTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACGTTAT

2221 CysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThrileThr
 CGTGTGTCACCCAGACAGTCGATTTCAGCCTGACCCCTACCTCACCATGGAGACAATCA
 GCACACAGTGGGTCTGTCAGCTAAAGTCGGAACCTGGGATGGAAGTGGTAACCTGTTAGT

2281 LeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLysPro
 CGCTCCCCCAGGATGCTGTCCTCCGCACTCAACGTCGGGGCAGGACTGGCAGGGGGAAAGC
 GCGAGGGGGGTCCTACGACAGAGGGCGTGAGTTGCAGCCCCGCTCTGACCGTCCCCCTCG

2341 GlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSerSerVal
 CAGGCATCTACAGATTGTGGCACCGGGGAGCGCCCTCCGGCATGTTGACTCGTCCG
 GTCCGTAGATGTCTAACACCGTGGCCCCCTCGCGGGGAGGCCGTAACAGCTGAGCAGGC

2401 LeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGluThrThr
 TCCCTGTGAGTGTCTATGACGCAGGCTGTGCTTGGTATGAGCTCACGCCGCCGAGACTA
 AGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGCAGGGGGCTCTGAT

2461 ValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHisLeuGlu
 CAGTTAGGCTACGAGCGTACATGAACACCCCGGGCTTCCCCTGTGCCAGGACCATTTG
 GTCAATCCGATGCTCGCATGTACTGTGGGGCCCCGAAGGGCACACGGTCTGGTAGAAC

2521 PheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSerGlnThr
 AATTTTGGGAGGGCGTCTTACAGGCCTACTCATATAGATGCCACTTCTATCCCAGA
 TTAAAACCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTAAAGATAAGGTCT

2581 LysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCysAlaArg
 CAAAGCAGAGTGGGGAGAACCTCCTTACCTGGTAGCGTACCAAGCCACCGTGTGCGCTA
 GTTTCGTCTCACCCCTCTGGAGGAATGGACCATCGCATGGTGGTGGCACACGCGAT

2641 AlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeuLysPro
 GGGCTCAAGCCCCCTCCCCCATCGTGGGACAGATGTTGAGTGTGTTGATTGCGCTCAAGC
 CCCGAGTTGGGGAGGGGGTAGCACCCTGGTCTACACCTTACAAACTAACGGAGTTCG

2701 ThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGluIleThr
 CCACCCCTCATGGGCCAACACCCCTGCTATACAGACTGGCGCTGTTCAGAATGAAATCA
 GGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCCGCACAAGTCTTACTTGT

2761 LeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGluValVal
 CCCTGACGCAACCCAGTCACCAAATACATGACATGTCGGCCGACCTGGAGGTG
 GGGACTGCGTGGGTCACTGGTTATGTAGTACTGTACGTACAGCCGGCTGGACCTCCAGC

2821 ThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCysLeuSer
 TCACGAGCACCTGGGTGCTCGTTGGCGCGCTGGCTGCTTGGCCGCGTATTGCTGT
 AGTGCTCGTGGACCCACGAGCAACGCCGAGCAGAAACCGGCACAGCAGAAC

2881 ThrGlyCysValValIleValGlyArgValLeuSerGlyLysProAlaIleIlePro
 CAACAGGCTGCGTGGTCATAGTGGCAGGGTCGTCTTGTCGGGAAGCCGGCAATCATAC
 GTTGTCCGACGCACCAAGTATCACCGTCCAGCAGAACAGGCCCTCGGCCGTTAGTATG

2941 AspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeuPro
 CTGACAGGGAAAGTCCCTACCGAGAGTTGAGATGAGATGGAAGAGTGTCTCAGCACTTAC
 GACTGTCCCTCAGGAGATGGCTCTCAAGCTACTCACCTCTCACGAGAGTCGTGAATG

FIG. 26D

TyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeuLeu
3001 CGTACATCGAGCAAGGGATGATGCTGCCGAGCAGTCAGTCAGCAGAAGGCCCTCGGCCTCC
GCATGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAGTCGTTCCGGAGCCGGAGG

GlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGlnLys
3061 TGCAGACCGCGTCCCGTCAGGCAGAGGTTATGCCCTGCTGTCAGACCAACTGGCAAA
ACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGACCGTT

LeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeuAla
3121 AACTCGAGACCTCTGGCGAAGCATATGTGGAACCTCATCAGTGGATAACAATACTTGG
TTGAGCTTGGAAAGACCCGCTTCGTATACACCTGAAGTAGTCACCCTATGTTATGAACC

GlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAlaAla
3181 CGGGCTTGTCACGCTGCCATTGCTTAACCCCGCCATTGCTCATTGATGGCTTTACAGCTG
GCCCGAACAGTTGCGACGGACCATTGGGGCGTAACGAAGTAACTACCGAAAATGTCGAC

ValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGlyTrpVal
3241 CTGTCACCAGCCCCTAACCAACTAGCCAAACCCCTCTTCACACATATTGGGGGGGGTGGG
GACAGTGGTGGGTGATTGGTGATCGGTTGGGAGGAAGTTGTATAACCCCCCACCC

AlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeuAlaGly
3301 TGGCTGCCAGCTGCCGCCGGTGCCTACTGCCCTTGTGGCGCTGGCTTAGCTG
ACCGACGGGTCGAGCGGCCGGGGGCCACGGCGATGACGGAAACACCCGCGACCGAACATCGAC

AlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGlyTyrGly
3361 GCGCCGCCATGGCAGTGTGGACTGGGAAAGGTCTCATAGACATCCTTGCAAGGTATG
CGCGCGGTAGCCGTACAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCCAC

AlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValProSerThr
3421 GCGCGGGCGTGGCGGAGCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCCCTCA
CGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCACTCCAGGGAGGT

GluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValValGlyVal
3481 CGGAGGACCTGGTCAATCTACTGCCGCATCCTCTGCCGGAGCCCTCGTAGTCGGCG
GCCTCTGGACCAGTTAGATGACGGCGGTAGGAGAGCGGGCCTGGGAGCATCAGCCGC

ValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGlnTrpMet
3541 TGGTCTGTGCAAGCAATACTGCCGGCACGTTGGCCGGCGAGGGGGCAGTGCAGTGG
ACCAAGACACGTCATTGACGCCGGCGTCAACCGGGCCGCTCCCCGTACGTACCT

AsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrValPro
3601 TGAACCGGCTGATAGCCTTCGCTCCGGGGAAACCATGTTCCCCACGCACACTCGT
ACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTGGTACAAAGGGGGTGGTGTACG

GluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGlnLeu
3661 CGGAGAGCGATGCACTGCCCGCTACTGCCATACTCAGCAGCCTACTGTAACCCAGC
GCCTCTCGCTACGTCACGGCGCAGTACGGTATGAGTCGTCGGAGTACGATTGGTCG

LeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySerTrp
3721 TCCTGAGGCAGTGCACCAAGTGGATAAGCTGGAGTGTACCACTCCATGCTCCGGTTCT
AGGACTCCGCTGACGTGGTCACCTATTGAGCCTCACATGGTGAGGTACGAGGCCAGGA

LeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeuLys
3781 GGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTGAGCGACTTTAACGACTGGCTAA
CCGATTCCCTGTAGACCCCTGACCTATACGCTCCACAACCGTCAAGAAATTCTGGACCGATT

AlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyrLys
3841 AAGCTAAGCTCATGCCACAGCTGCCCTGGATCCCTTGTGTCCTGCCAGCGCGGGTATA
TTCGATTGAGTACGGTGTGACGGACCCCTAGGGGAAACACAGGACGGTCGCGCCCATAT

GlyValTrpArgValAspGlyIleMetHisThrArgCysHisCysGlyAlaGluIleThr
3901 AGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAGATCA
TCCCCCAGACCGCTCACCTGCCGTAGTACGTGTGAGCGACGGTACACCTCGACTCTAGT

GlyHisValLysAsnGlyThrMetArgIleValGlyProArgThrCysArgAsnMetTrp
3961 CTGGACATGTCAAAAACGGGACGATGAGGATGTCGGTCTAGGACCTGCAGGAACATGT
GACCTGTACAGTTTGCCCTGCTACTCCTAGCAGCAGGATCCTGGACGTCCTTGACA

FIG. 26E

SerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeuProAlaPro
4021 GGAGTGGGACCTCCCCATTAAATGCCAACACCACGGGCCCCGTACCCCTTCCTGC
CCTCACCCCTGGAAAGGGTAATTACGGATGTGGTGCCCAGGGACATGGGGGAAGGACGCG

AsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArgGlnVal
4081 CGAACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAGGCAGG
GCTTGATGTGCAAGCGCGATACTCCCACAGACGTCCTTATACACCTTATTCCGTCC

GlyAspPheHisTyrValThrGlyMetThrThrAsnLeuLysCysProCysGlnVal
4141 TGGGGGACTTCACTACGTGACGGGTATGACTACTGACAATCTAAATGCCGTGCCAGG
ACCCCCCTGAAGGTATGCACTGCCACTGACTGTTAGAGTTACGGCACGGTCC

ProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAlaProPro
4201 TCCCCATCGCCCGAATTTTCACAGAATTGGACGGGTGCGCCTACATAGGTTGCC
AGGGTAGCGGGCTTAAAAAGTGTCTAACCTGCCACGCGGATGTATCAAACGCGGGG

CysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyrProVal
4261 CCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTAGAGTAGGACTCCACGAATACCCGG
GGACGTTCGGGAACGACGCCCTCCATAGTAAGTCTCATCTGAGGTGCTTATGGGCC

GlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMetLeuThr
4321 TAGGGTCGCAATTACCTTGCGAGGCCGAACCGGACGTGGCGTGTGACGTCCATGCTCA
ATCCCAGCGTTAATGGAACGCTCGGGCTTGGCCTGCACCGGACAACACTGCAGGTACGAGT

AspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySerProPro
4381 CTGATCCCTCCCATAAACAGCAGAGGCCGGCGAAGGTTGGCGAGGGGATCACCCC
GACTAGGGAGGGTATATTGTCGTCGCCGGCCGCTTCAACCGCTCCCTAGTGGGG

SerValAlaSerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCysThr
4441 CCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCAAGGCAACTGCA
GGAGACACCGGTCGAGGAGCCGATCGGTGATAGGGAGGTAGAGAGTTCCGTTGAACGT

AlaAsnHisAspSerProAspAlaGluIleGluAlaAsnLeuLeuTrpArgGlnGlu
4501 CCGCTAACCATGACTCCCCGTGCTGAGCTCATAGAGGCCAACCTCTATGGAGGCAGG
GGCGATTGGTACTGAGGGGACTACGACTCGAGTATCTCGGTTGGAGGATACCTCCGTCC

MetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSerPhe
4561 AGATGGGCGGCAACATCACCAAGGGTTGAGTCAGAAAACAAAGTGGTATTCTGGACTCCT
TCTACCCGCCCTGTAGTGGTCCAACTCAGTCTTGTGTTACCAACTAACGACTGAGGA

AspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeuArg
4621 TCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCGTACCCGAGAAATCCTGC
AGCTAGGCGAACACCGCCTCCTCTGCTGCCCTAGAGGCATGGCGTCTTAGGACG

LysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnProPro
4681 GGAAGTCTCGGAGATTGCCAACGCCCTGCCGTTGGCGCGCCGGACTATAACCCC
CCTCAGAGCCTCTAACGGGTCGGGACGGCAAAACCGCGCCGGCTGATATTGGGGG

LeuValGluThrTrpLysProAspTyrGluProProValValHisGlyCysProLeu
4741 CGCTAGTGGAGACGTGGAAAAAGCCCGACTACGAACCACCTGTGGTCCATGGCTGTCCGC
GCGATCACCTCTGACACCTTTCGGGCTGATGCTTGGACACCAGGTACCGACAGGCG

ProProProLysSerProProValProProProArgLysLysArgThrValValLeuThr
4801 TTCCACCTCAAAGTCCCCCTCTGTGCCTCCGCCTCGGAAGAAGCGGACGGTGGTCTCA
AAGGTGGAGGGTTCAAGGGAGGACACGGAGGCGGAGCCTTCTCGCCTGCCACCAAGGAGT

GluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSerSer
4861 CTGAATCAACCCCTATCTACTGCCCTGGCCGAGCTGCCACCAAGAAGCTTGGCAGCTCCT
GACTTAGTTGGGATAGATGACGGAACCGGCTGAGCGGTGGTCTCGAAACCGTCGAGGA

ThrSerGlyIleThrGlyAspAsnThrThrSerSerGluProAlaProSerGlyCys
4921 CAACTCCGGCATTACGGCGACAATACGACAACATCCTCTGAGCCCAGCCCTTCTGGC
GTTGAAGGCCGTAATGCCGCTGTTATGCTGTTAGGAGACTGGGGCGGGGAAGACCGA

ProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGluProGly
4981 GCCCCCCCGACTCCGACGCTGAGTCCTATTCCCATGCCCTGGAGGGGGAGCTG
CGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGACCTCCCCCTCGGAC

FIG. 26F

AspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGluAsp
5041 GGGATCCGGATCTTAGCAGCGGTATGGTCACGGTCAGTAGTGAGGCCAACGGAGG
CCCTAGGCCTAGAATCGTGCAGTACCAAGTTGCCAGTCATCACTCCGGTTGCGCCTCC
ValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeuValThrProCysAlaAla
5101 ATGTCGTGCTGCTCAATGCTTACTCTGGACAGGGCGACTCGTCACCCGTGCGCCG
TACAGCACACGACGAGTTACAGAAATGAGAACCTGTCCGCGTGAGCAGTGGGCACGCGG
GluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHisAsnLeu
5161 CGGAAGAACAGAAACTGCCATCAATGCACTAAGCAACTCGTTGCTACGTACCAATT
GCCTCTTGCTTTGACGGTAGTTACGTGATTGAGCAACGATGCAGTGGTGTAA
ValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysLysValThrPheAspArg
5221 TGGTGTATTCACCACCTCACGAGTGCTGCCAAAGGCAGAAGAAAGTCACATTGACA
ACCACATAAGGTGGTGGAGTGCGTCACGAACGGTTCCGTCTTCAGTGTAAACTGT
LeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAlaAlaAlaSer
5281 GACTGCAAGTCTGGACAGCATTACCAAGGACGTAACCAAGGAGGTTAAAGCAGCGGC
CTGACGTTCAAGACCTGTCGGTAATGGTCCTGCATGAGTTCTCCAATTCGTCGCCGCA
LysValLysAlaAsnLeu
5341 CAAAAGTGAAGGCTAACTTG
GTTTCACTCCGATTGAAC

FIG. 30

GlyGlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCys
1 GGGGGGGAGAACTGCGGCTATCGCAGGTGCCGCGAAGCGCGTACTGACAAGTAGCTGT
CCCCCCCCTTGACGCCGATAGCGTCCACGGCGCGTCCGCGCATGACTGTTGATCGACA
GlyAsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGln
61 GGTAAACACCCCTCACTTGTACATCAAGGCCGAGCAGCCTGTCGAGCCGAGGGCTCCAG
CCATTGTGGGAGTGAACAAATGTAGTTCCGGGCTCGTCGGACAGCTCGGCGTCCCAGGGTC
-----Overlap with 19g-----
AspCysThrMetLeuValCysGlyAspAspLeuValValIleCysGluSerAlaGlyVal
121 GACTGCACCATGCTCGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTC
CTGACGTGGTACGAGCACACACCCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCAG
GlnGluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaPro
181 CAGGAGGACGCCGAGCCTGAGAGCCTCACGGAGGCTATGACCAAGGTACTCCGCC
GTCCTCCTGCGCCGCTGGACTCTCGGAAGTGCCTCGATACTGGTCCATGAGGC
ProGlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsn
241 CCTGGGGACCCCCCACAACCAGAAATACGACTTGGAGCTCATAACATCATGCTCCTCCAAC
GGACCCCTGGGGGTGTTGGTCTTATGCTAACCTCGAGTATTGTAGTACGAGGAGGTTG
ValSerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThr
301 GTGTCAGTCGCCACGACGGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCC
CACAGTCAGCGGGTGCTGCCCGACCTTCTCCAGATGATGGAGTGGCACTGGGATGT
ThrProLeuAlaArgAlaAlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeu
361 ACCCCCCCTCGCGAGAGCTGCGTGGGAGACAGCAAGACACACTCCAGTCACGGCT
TGGGGGGAGCGCTCGACGACCCCTGTCGTTCTGTGAGGTCAAGTAAAGGACCGAT
GlyAsnIleIleMetPheAlaProThrLeuTrpAla
421 GGCAACATAATCATGTTGCCACACTGTGGGCG
CGTTGTATTAGTACAAACGGGGGTGTGACACCCGC

FIG. 27

IlePheLysIleArgMetTyrValGlyGlyValGluHiisArgLeuGluAlaAlaCysAsn
1 CCATATTAAATCAGGATGTACGTGGAGGGTCTCGAACACAGGCTGGAAAGCTGCCTGCGA
GGTATAATTAGTCCTACATGCCACCCCTCCCAAGCTTGTCGACCTTGACGGACGTT
TrpThrArgGlyGluArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeu
6 1 ACTGGACGGGGCGAACGTTGCGATCTGGAAAGAACAGGGACAGGGTCCAGCTCAGCCCCGTT
TGACCTGGCCCCCGCTTGCAACGGCTAGACCTTGCCCTGTCCAGGCTCGAGTCGGCA
LeuLeuThrThrGlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeu
12 1 TACTGCTGACCACTACACAGTGGCAGGTCTCCCGTGTCTTCAACACCTAACAGGCT
ATGACGACTGGTGTATGTGTACCGTCCAGGAGGGACAAGGAAGTGTGGATGGTGGAA
SerThrGlyLeuIleHisLeuHiisGlnAsnIleValAspValGlnTyrLeuTyrglyVal
18 1 TGTCCACCGGCCCTCATCCACCTCACCAGAACATGTGGACGTGCAGTACTTGTACGGGG
ACAGGGCCGGAGTAGGTGGAGGTGGTGTCTTGTAAACACCTGCACGTCAATGCCCC

GlySerSerIleAlaSerTrpAlaIleLysTrpGluItyrValValLeuLeuPheLeuLeu
24 1 TGGGGTCAAGCATTGGGTCCCTGGCCATTAAGTGGAGTACGTGTTCTCTGTGGCT
ACCCCAGTTCTGTAGGGCAGGCCGGTAATTCAACCTCTATGCAGCAAGGACAAGGAAG

LeuAlaAspAlaArgValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGlu
30 1 TGCTTGAGACGGCGGGCTGCTGCTGGATGATGCTACTCATATCCCAAGCGG
ACGAAACGTCTGGCGGGCAGACGGAGCAACACCTACTACGATGAGTATAGGGTTGCC

Overlap with 14i-----
AlaAlaLeuGluAsnIleValIleLeuAsnAlaSerLeuAlaAlaSerLewAlaGlyThrHiisGlyLeu
36 1 AGGGGGCTTGGAGAACCTCGTAATACTTAATGCAAGCCTGGCCGGGACGCAACGGTC
TCCGCCAAACCTCTTGGAGCATATTAGAATTACGTCGTAGGGACCCGCCCTGCGTGCCAG

Val
42 1 TTGTATC
AACATAG

FIG. 28

-----Overlap with 39c-----

1 LeuLysGluValLysAlaAlaAlaSerLysValLysAlaAsnLeuLeuSerValGluGlu
TGCTCAAGGAGGTTAAAGCAGCGCGTCAAAAGTGAAGGCTAACTTGCTATCCGTAGAGG
ACGAGTTCTCCAATTCTCGTCGCCGCAGTTTCACTTCCGATTGAACGATAAGGCATCTC

61 AlaCysSerLeuThrProProHisSerAlaLysSerLysPheGlyTyrGlyAlaLysAsp
AAGCTTGCAGCCTGACGCCAACACTCAGCAAATCCAAGTTGGTTATGGGGCAAAAG
TTCGAACGTCGGACTGCGGGGGTGTGAGTCGGTTAGGTTCAAACCAATACCCGTTTC

121 ValArgCysHisAlaArgLysAlaValThrHisIleAsnSerValTrpLysAspLeuLeu
ACGTCGTTGCCATGCCAGAAAGGCCGTAAACCCACATCAACTCCGTGTGGAAAGACCTTC
TGCAGGCAACGGTACGGTCTTCCGGCATTGGGTGTAGTTGAGGCACACCTTCTGGAAG

181 GluAspAsnValThrProIleAspThrThrIleMetAlaLysAsnGluValPheCysVal
TGGAAAGACAATGTAACACCAATAGACACTACCATCATGGCTAAGAACGAGGTTTCTGCG
ACCTTCTGTTACATTGTTATCTGTGATGGTAGTACCGATTCTGCTCCAAAAGACGC

241 GlnProGluLysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeuGlyVal
TTCAGCCTGAGAAGGGGGGTCGTAAGCCAGCTCGTCTCATCGTGTCCCCGATCTGGCG
AAGTCGGACTTTCCCCCAGCATTGGTCGAGCAGAGTAGCACAAAGGGCTAGACCCG

301 ArgValCysGluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAlaValMet
TGCAGCTGCGAAAAGATGGCTTGTACGACGTGGTTACAAAGCTCCCTGGCCGTGA
ACGCGCACACGTTTACCGAAACATGCTGCACCAATGTTGAGGGGAACCGGGCACT

361 GlySerSerTyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuValGlnAla
TGGGAAGCTCCTACGGATTCCAATACTCACCAGGACAGCGGGTTGAATTCTCGTGCAAG
ACCTTCGAGGATGCTTAAGGTATGAGTGGCCTGTCGCCAACTTAAGGAGCACGTT

421 TrpLysSerLysLysThrProMetGlyPheSerTyrAspThrArgCysPheAspSerThr
CGTGGAAAGTCCAAGAAAACCCCAATGGGGTCTCGTATGATAACCGCTGCTTGAATCCA
GCACCTTCAGGTTTTGGGTTACCCCAAGGCATACTATGGCGACGAAACTGAGGT

481 ValThrGluSerAspIleArgThrGluGluAla
CAGTCACTGAGAGCGACATCCGTACGGAGGGAGGCA
GTCAGTGACTCTCGCTGTAGGCATGCCTCTCCGT

FIG. 29

1 GluPheLeuValGlnAlaTrpLysSerLysLysThrProMetGlyPheSerTyrAspThr
GAATTCCCTCGTGCAGCGTGGAAAGTCCAAGAAAACCCCAATGGGGTTCTCGTATGATACC
CTTAAGGAGCACGTCGCACCTTCAGGTCTTTGGGGTACCCCAAGAGCATACTATGC
-----Overlap with 35f-----
61 ArgCysPheAspSerThrValThrGluSerAspIleArgThrGluGluAlaIleTyrGln
CGCTGCTTGACTCCACAGTCACTGAGAGCGACATCCGTACGGAGGAGGCAATCTACCAA
GCGACGAAACTGAGGTGTCAGTGACTCTCGCTGTAGGCATGCCTCCCGTTAGATGGTT
121 CysCysAspLeuAspProGlnAlaArgValAlaIleLysSerLeuThrGluArgLeuTyr
TGGTGTGACCTCGACCCCCAAGGCCGCGTGGCCATCAAGTCCCTCACCGAGAGGCTTAT
ACAACACTGGAGCTGGGGTTGGCGCACCGTAGTTAGGGAGTGGCTCTCCGAAATA
181 ValGlyGlyProLeuThrAsnSerArgGlyGluAsnCysGlyTyrArgArgCysArgAla
GTTGGGGGCCCTCTTACCAATTCAAGGGGGAGAACACTGCGGCTATCGCAGGTGCCGCG
CAACCCCCGGAGAATGGTTAGTTCCCCCTCTTGACGCCATAGCGTCCACGGCGCG
241 SerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCysTyrIleLysAlaArgAla
AGCGGCGTACTGACAACTAGCTGTGGTAACACCCCTCACTTGCTACATCAAGGCCCGGCA
TCGCCGCGCATGACTGTTGATCGACACCATTGTGGGAGTGAACGATGTAGTTCCGGGCCGT
301 AlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeuValCysGlyAspAspLeuVal
GCCTGTCGAGCCGCAGGGCTCAGGACTGCAACCATGCTCGTGTGGCGACGACTTAGTC
CGGACAGCTGGCGTCCCAGGTCTGACGTGGTACGAGCACACACCGCTGCTGAATCAG
361 ValIleCysGluSerAlaGlyValGlnGluAspAlaAla
GTTATCTGTGAAAGCGCGGGGTCCAGGAGGACGCGCGAG
CAATAGACACTTCCGCGCCCCCAGGTCTCGCGCCGCTC

FIG. 31

1 GLYAlaGLYArgValTyrTyrLeuThrArgAspProThrThrProLeuAlaArgAla
CGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCCTACAAACCCCCCTCGCGAGAGC
GCCGCACCTTTCTCCAGATGGAGTGGCACTGGGATGTGGATGGGGAGGGCTCTCG
-----Overlap with 26g-----
61 AlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMetPhe
TGGCTGGAGACAGCAAGAACACACTCCAGTCATTCCCTGGCTAGGCAACATAATCATGTT
ACGCACCCCTCTGTCGTTCTGTGAGGTCAAGTAAGGACCGATCCGGTGTGATTAGTACAA

121 AlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeuIleAla
TGCCCCACACTGTGGCGAGGATGATACTGACCCATTTCCTTAGCGCTCCTTATAGC
ACGGGGGTGTGACACCCGCTCCCTACTATGACTACTGGGTAAAGAAATCGCAGGAATATCG

181 ArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIleGlu
CAGGGACCAGCTTGAAACAGGCCCTCGATTCGGAGATCTACGGGGCCTGCTACTCCATAGA
GTCCCCTGGTCAACTTGTCGGAGCTAACGCTCTAGATGCCGGACGATGAGGTATCT

241 ProLeuAspLeuProProIleIleGlnArgLeu
ACCACTGATCTACCTCAATCATCAAAGACTC
TGGTGAACTAGATGGAGGTAGTAAGTTCTGAG

FIG. 32A

IlePheLysIleArgMetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsn
1 CCATATTTAAATCAGGATGTACGTGGGAGGGGTCGAACACAGGCTGGAAGCTGCCTGCA
GGTATAAATTAGTCCTACATGCACCCCTCCCCAGCTTGTGCCGACCTCGACGGACGT
TrpThrArgGlyGluArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeu
61 ACTGGACGCAGGGCGAACAGTTGCATCTGGAAGACAGGGACAGGTCCGAGCTCAGCCCGT
TGACCTGCAGCCCCGCTTGCAACGCTAGACCTCTGTCCCTGTCCAGGCTCGAGTCGGGCA
LeuLeuThrThrThrGlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeu
121 TACTGCTGACCAACTACACAGTGGCAGGTCTCCGTGTTCTCACAAACCTACCGACCT
ATGACGACTGGTATGTCACCGTCCAGGGAGGGACAAGGAAGTGTGGGATGGTCGGA
SerThrGlyLeuIleHisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyVal
181 TGTCACCAGGCTCATCCACCTCACAGAACATTGGGACGTGAGTACTTGACGGGG
ACAGGTGGCCGGAGTAGGGTGGAGGTGGTCTTGTAAACACCTGCACGTCATGAACATGCC
GlySerSerIleAlaSerTrpAlaIleLysTrpGluTyrValValLeuLeuPheLeuLeu
241 TGGGGTCAAGCATCGCGTCTGGGCCATTAAAGTGGGAGTACGTCGTTCTCCGTGTTCTC
ACCCAGTCGTAGCGCAGGACCCGGTAATTCCACCTCATGCAGCAAGAGGACAAGGAAG
LeuAlaAspAlaArgValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGlu
301 TGCTTGAGACGCGCGTCTGCTCTGCTTGATGATGCTACTCATATCCCAGCG
ACGAACGTCGCGCGCAGACGAGGACGAACACCTACTACGATGAGTATAGGGTTCGCC
AlaAlaLeuGluAsnLeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeu
361 AGGCAGGCTTGGAGAACCTCGTAATACTTAATGCAAGCATCCCTGGCCGGACGCACGG
TCCGCCGAAACCTCTGGAGCATTAGAATTACGTCGTAGGGACCAGGCCCTGCGTGCCAG
ValSerPheLeuValPhePheCysPheAlaTrpTyrLeuLysGlyLysTrpValProGly
421 TTGTATCCTCCTCGTGTCTCTGCTTGATGGTATTGAAAGGGTAAGTGGGTGCC
AACATAGGAAGGAGCACAAGAACGAAACGTACCATAAACTCCCATTCAACCCACGGGC
AlaValTyrThrPheTyrGlyMetTrpProLeuLeuLeuLeuLeuAlaLeuProGln
481 GAGCGGTCTACACCTCTACGGGATGTGGCCTCTCCTCTGCTCTGTTGGCGTTGCC
CTCGCCAGATGTGGAGATGCCCTACACCGGAGAGGAGGACGAGGACAACCGCAACGGGG
ArgAlaTyrAlaLeuAspThrGluValAlaAlaSerCysGlyGlyValValLeuValGly
541 AGCGGGCGTACGCGCTGGACACGGAGGTGGCCGCGTGTGTGGCGGTGTTCTCGTC
TCGCCCGCATGCGCAGCTGTGCCCTCACCGGCGCAGCACACGCCACAACAGAGCAGC
LeuMetAlaLeuThrLeuSerProTyrTyrLysArgTyrIleSerTrpCysLeuTrpTrp
601 GGTTGATGGCGCTGACTCTGTCACCATATTACAAGCGCTATATCAGCTGGTGCTTGTGGT
CCAACATCCCGCACTGAGACAGTGGTATAATGTCGCGATATAGTCGACCACGAACACCA
LeuGlnTyrPheLeuThrArgValGluAlaGlnLeuHisValTrpIleProProLeuAsn
661 GGCTTCAGTATTTCTGACCAGAGTGGAGCGCAACTGCACGTGTGGATTCCCCCCC
CCGAAGTCATAAAAGACTGGTCTCACCTCGCGTGTGACGTGACACCTAACGGGGAGT
ValArgGlyGlyArgAspAlaValIleLeuLeuMetCysAlaValHisProThrLeuVal
721 ACGTCCGAGGGGGCGCGACGCCGTACCTTACTCATGTGTGCTGTACACCGACTCTGG
TGCAGGCTCCCCCGCGCTGCGGAGTAGAATGAGTACACACGACATGTGGCTGAGACC
PheAspIleThrLysLeuLeuLeuAlaValPheGlyProLeuTrpIleLeuGlnAlaSer
781 TATTTGACATACCAAATTGCTGCTGGCCGTCTCGGACCCCTTGGATTCTCAAGGCC
ATAAAACTGTAGTGGTTAACGACGACGGCAGAACGCTGGGAAACCTAACAGAGTTGGT
LeuLeuLysValProTyrPheValArgValGlnGlyLeuLeuArgPheCysAlaLeuAla
841 GTTGCTTAAAGTACCCACTTTGTGCGCGTCAAGGCCTCTCCGGTTCTGCGCGTTAG
CAAACGAATTTCATGGGATGAAACACGCGCAGGTTCCGGAGAGGCAAGACGCGCAATC

FIG. 32B

ArgLysMetIleGlyGlyHisTyrValGlnMetValIleIleLysLeuGlyAlaLeuThr
901 CGCGGAAGATGATCGGAGGCCATTACGTCAAATGGTCATCATTAAGTTAGGGCGCTTA
GCGCCTTCTACTAGCTCCGGTAATGCACGTTACCAAGTAGTAATTCAATCCCCGCGAAT
GlyThrTyrValTyrAsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArg
961 CTGGCACCTATGTTATAACCACCTCACTCCTCTCAGGACTGGCGCACAAACGGCTTGC
GACCGTGGATACAAATATTGGTAGAGTGAGGAGAACGCCCTGACCCGCGTGGTGCACG
AspLeuAlaValAlaValGluProValValPheSerGlnMetGluThrLysLeuIleThr
1021 GAGATCTGGCCGTGGCTGTAGAGCCAGTCGTCTTCTCCAAATGGAGACCAAGCTCATCA
CTCTAGACCGGGCACCGACATCTGGTCAGCAGAACAGAGGGTTACCTCTGGTGCAGTAGT
TrpGlyAlaAspThrAlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArg
1081 CGTGGGGGGCAGATAACCGCCGCGTGCAGGACATCATCACACGGCTTGCCTGTTCCGCC
GCACCCCCCGTCTATGGCGGCCACGCCACTGTAGTAGTTGCCAACGGACAAAGGCCGG
ArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeu
1141 GCAGGGGCCGGGAGATACTGCTGGGCCAGCCGATGGAATGGCTCCAAGGGGTGGAGGT
CGTCCCCGGCCCTCTATGACGAGCCCCTGGCTACCTTACCAAGAGGTTCCCACCTCCA
LeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThr
1201 TGCTGGCGCCCATCACGGCGTACGCCAGCAGACAAGGGCCTCTAGGGTGCATAATCA
ACGACCGCGGGTAGTGCCGATGCCGCTGTGTTCCGGAGGATCCCACGTATTAGT
SerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIleValSerThrAla
1261 CCAGCCTAACTGGCCGGGACAAAAAACCAAGTGGAGGGTGAGGTCCAGATTGTGCACTG
GGTCGGATTGACCGGCCCTGTTTGGTCACCTCCACTCCAGGTCTAACACAGTTGAC
AlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThrValTyrHisGlyAla
1321 CTGCCCCAACCTCTGGCAACGTGCATCAATGGGTGTGCTGGACTGTCACCAACGGGG
GACGGGTTTGGAAAGGACCGTTGCACGTAGTTACCCACACGACCTGACAGATGGTCCCC
GlyThrArgThrIleAlaSerProLysGlyProValIleGlnMetTyrThrAsnValAsp
1381 CCGGAACGAGGACCATCGCGTACCCAAGGGCTCTGTCATCCAGATGTACCAATGTAG
GGCTTGCTCTGGTAGCGCAGTGGTTCCCAGGACAGTAGGTCTACATATGGTACATC
GlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeuThrProCysThrCys
1441 ACCAAGACCTTGTGGCTGGCCGCTCCGCAAGGTAGCCGCTCATTGACACCCCTGCACTT
TGTTCTGGAACACCCGACCGGGCGAGGCGTCCATGGCGAGTAACTGTGGACGTGAA
GlySerSerAspLeuTyrLeuValThrArgHisAlaAspValIleProValArgArgArg
1501 GCGGCTCCTCGGACCTTACCTGGTCACGAGGCACGCCGATGTCATTCCGTGCGCCGGC
CGCCGAGGAGCCTGGAAATGGACCAAGTGCTCCGTGGCTACAGTAAGGGCACGCCGG
GlyAspSerArgGlySerLeuLeuSerProArgProIleSerTyrLeuLysGlySerSer
1561 GGGGTGATAGCAGGGGCAGCCTGCTGTCGCCCCGGCCCATTCTACTTGAAAGGCTCCT
CCCCACTATCGTCCCCGGACGACAGCTGGGCCGGTAAAGGATGAAACTTCCGAGGA
GlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePheArgAlaAlaValCys
1621 CGGGGGGTCCGCTGTTGTGCCCCGGGGCACGCCGTGGCATTAGGGCCGCGGTGT
GCCCGGAGGCGAACACAGGGGCGCCCCGTGGCACCCGTATAAATCCGGCGCCACA
ThrArgGlyValAlaLysAlaValAspPheIleProValGluAsnLeuGluThrThrMet
1681 GCACCCGTGGAGTGCGTAAGGCGGTGGAATTACCTGTGGAGAACCTAGAGACAACCA
CGTGGGCACCTCACCGATTCCGCCACCTGAAATAGGGACACCTCTGGATCTCTGGT

FIG. 32C

ArgSerProValPheThrAspAsnSerSerProProValValProGlnSerPheGlnVal
 1741 TGAGGTCCCCGGTGTTCACGGATAACTCTCTCCACCAAGTAGTGCCCCAGAGCTTCCAGG
 ACTCCAGGGGCCACAAGTGCCTATTGAGGAGAGGTGGTCATCACGGGTCTCGAAGGTCC

 AlaHisLeuHisAlaProThrGlySerGlyLysSerThrLysValProAlaAlaTyrAla
 1801 TGGCTCACCTCCATGCTCCCACAGGCAGCGGCAAAGCACCAAGGTCCGGCTGCATATG
 ACCGAGTGGAGGTACGAGGGTGTCCGTCGCCGTTTCGTGGTCCAGGGCCGACGTATAC

 AlaGlnGlyTyrLysValLeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGly
 1861 CAGCTCAGGGCTATAAGGTGCTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTTG
 GTCGAGTCCCGATATTCACGATCATGAGTTGGGAGACAACGACGTTGTGACCCGAAAC

 AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIle
 1921 GTGCTTACATGTCCAAGGCTCATGGGATCGATCTAACATCAGGACCGGGGTGAGAACAA
 CACGAATGTACAGGTTCCGAGTACCCTAGCTAGGATTGATGTCCTGGCCCCACTTTGTT

 ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCys
 1981 TTACCACTGGCAGCCCCATCACGTACTCCACCTACGGCAAGTCCCTGCGACGGGGGT
 AATGGTGACCGTCGGGGTAGTGATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCA

 SerGlyGlyAlaTyrAspIleIleIleCysAspGluCysHisSerThrAspAlaThrSer
 2041 GCTCGGGGGCGCTTATGACATAATAATTGTGACGAGTGCCACTCCACGGATGCCACAT
 CGAGCCCCCGCGAATACTGTATTAAACACTGCTCACGGTGAGGTGCCCTACGGTGA

 IleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValVal
 2101 CCATCTTGGGCATCGCACTGTCCTTGACCAAGCAGAGACTGCGGGGGCAGACTGGTTG
 GGTAGAACCGTAGCGTGACAGGAAGTGGTCTGACGCCCGCTCTGACCAAC

 LeuAlaThrAlaThrProProGlySerValThrValProHisProAsnIleGluGluVal
 2161 TGCTCGCCACCGCCACCCCTCCGGCTCGTCACTGTGCCCCATCCAAACATCGAGGAGG
 ACGAGCGGTGGCGGTGGGAGGGCCGAGGCAGTGACACGGGTAGGGTTGAGCTCTCC

 AlaLeuSerThrThrGlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIle
 2221 TTGCTCTGCCACCAACCGGAGAGATCCCTTTACGGCAAGGCTATCCCCCTCGAAGTAA
 AACGAGACAGGTGGTGGCCTCTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATT

 LysGlyGlyArgHisLeuIlePheCysHisSerLysLysLysCysAspGluLeuAlaAla
 2281 TCAAGGGGGGGAGACATCTCATTTCTGTCATTCAAAGAAGTGCAGCAACTGCCG
 AGTTCCCCCTCTGTAGAGTAGAACAGTAAGTTCTTCACGCTGCTTGAGCGGC

 LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerVal
 2341 CAAAGCTGGTCGATTGGGCATCAATGCCGTGGCTACTACCGCGGTCTGACGTGTCGG
 GTTCGACCAGCGTAACCGTAGTTACGGCACCGGATGATGGCGCCAGAACACTGCACAGGC

 IleProThrSerGlyAspValValValValAlaThrAspAlaLeuMetThrGlyTyrThr
 2401 TCATCCGACCGAGCGCGATGTTGTCGTGGCAACCGATGCCCTCATGACCGGGCTATA
 AGTAGGGCTGGTCGCCGCTACAACAGCAGCACCGTGGCTACGGGAGTACTGCCGATAT

 GlyAspPheAspSerValIleAspCysAsnThrCysValThrGlnThrValAspPheSer
 2461 CCGGCGACTTCGACTCGGTGATAGACTGCAATACGTGTCACCCAGACAGTCGATTCA
 GGCGCTGAAGCTGAGCCACTATCTGACGTTATGCACACAGTGGGTCTGTCAGCTAAAGT

 LeuAspProThrPheThrIleGluThrIleThrLeuProGlnAspAlaValSerArgThr
 2521 GCCTTGACCCCTACCTCACCATTGAGACAATCACGCTCCCCCAGGATGCTGTCTCCCGCA
 CGGAACCTGGGATGGAAGTGGTAACTCTGTTAGTGCAGGGGGTCCCTACGACAGAGGGCGT

 GlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGly
 2581 CTCACAGTCGGGGCAGGACTGGCAGGGGGAAAGCCAGGCATCTACAGATTGTGGCACCGG
 GAGTTGCAGCCCCGTCCTGACCGTCCCCCTCGGTCCGTAGATGTCTAAACACCGTGGCC

 GluArgProSerGlyMetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCys
 2641 GGGAGCGCCCTCCGGCATGTTGACTCGTCCGTCTGTGAGTGCTATGACGCAGGCT
 CCCTCGGGGGAGGCCGTACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGA

 AlaTrpTyrGluLeuThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThr
 2701 GTGCTTGGTATGAGCTCACGCCGCGAGACTACAGTTAGGCTACGAGCGTACATGAACA
 CACGAACCATACTCGAGTGCAGGGCTCTGATGTCAATCCGATGCTCGCATGTACTTGT

FIG. 32D

ProGlyLeuProValCysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeu
 2761 CCCCGGGGGCTTCCCGTGTGCCAGGACCATCTTGAAATTGGGAGGGCGTCTTCACAGGCC
 GGGGCCCCGAAGGGCACACGGTCTGGTAGAACTTAAACCTCCCGCAGAAATGTCCGG
 ThrHisIleAspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyr
 2821 TCACTCATATAGATGCCCACTTCTATCCCAGACAAGCAGAGTGGGGAGAACCTCCTT
 AGTGAGTATATCTACGGGTAAAGATAGGGTCTGTTCTCACCCCTCTGGAGGGAA
 LeuValAlaTyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAsp
 2881 ACCTGGTAGCGTACCAAGCCACCGTGTGCCTAGGGCTCAAGCCCCTCCCCATCGTGGG
 TGGACCATCGCATGGTTCGGTGGCACACCGCATCCGAGTTGGGGAGGGTAGCACCC
 GlnMetTrpLysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeu
 2941 ACCAGATGTGGAAAGTGTGATTGCCCTCAAGCCCACCCCTCCATGGGCCAACACCCCTGC
 TGGTCTACACCTTACAAACTAACGGAGTTGGGTGGAGGTACCCGGTTGTGGGAGC
 TyrArgLeuGlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIle
 3001 TATACAGACTGGGCGCTGTTCAAGAATGAAATCACCCCTGACGCACCCAGTCACCAAATACA
 ATATGCTGACCCGCACAAAGTCTTACTTAGTGGACTGCGTGGTCAGTGGTTATGT
 MetThrCysMetSerAlaAspLeuGluValThrSerThrTrpValLeuValGlyGly
 3061 TCATGACATGCATGTCGGCCGACCTGGAGGTGTCACGAGCACCTGGGTGCTCGTGGCG
 AGTACTGTACGTACAGCCGGCTGGACCTCCAGCAGTGCCTGTCGTGGACCCACGAGCAACCGC
 ValLeuAlaAlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArg
 3121 GCGTCCTGGCTGCTTGGCCGCGTATTGCCGTATGCCGTCAACAGGCTGCGTGGCATAGTGGGCA
 CGCAGGACCGACGAAACCGGGCGATAACGGACAGTTGTCGCAGCACCAGTACACCCGT
 ValValLeuSerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPhe
 3181 GGGTCGTCTGTCCGGGAAGCCGGCAATCATACTGACAGGGAAAGTCTTACCGAGAGT
 CCCAGCAGAACAGGCCCTCGGCCGTAGTATGGACTGTCCTCAGGAGATGGCTCTCA
 AspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAla
 3241 TCGATGAGATGGAAGAGTGTCTCAGCACCTACCGTACATCGAGCAAGGGATGATGCTCG
 AGCTACTCTACCTCTCACGAGAGTCGTGAATGGCATGAGCTCGTCCCTACTACGAGC
 GluGlnPheLysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluVal
 3301 CCGAGCAGTTCAAGCAGAACGCCCTCGGCCCTCGAGACCGCGTCCGTCAAGGCAGAGG
 GGCTCGTCAAGTCGTTCCGGGAGCCGGAGGTCTGGCGCAGGGCAGTCCGTCTCC
 IleAlaProAlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMet
 3361 TTATCGCCCCCTGCTGTCAGACCAACTGGAAAAACTCGAGACCTCTGGCGAAGCATA
 AATAGCAGGGACGACAGGTCTGGTTGACCGTTTGAGCTCTGGAAGACCCGCTTCGTAT
 TrpAsnPheIleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnPro
 3421 TGTGGAACTTCATCAGTGGGATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACC
 ACACCTGAAGTAGTCACCCATGTTATGAACCGCCCCAACAGTTGCGACGGGACCATGG
 AlaIleAlaSerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
 3481 CCGCCATTGCTTCATTGATGGCTTTACAGCTGCTGTCACCAGGCCACTAACCAACTAGCC
 GCGGTAACGAAGTAACCTACCGAAAATGTCGACGACAGTGGTGGGTGATTGGTGATCGG
 ThrLeuLeuPheAsnIleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAla
 3541 AAACCCCTCTCTTCAACATATTGGGGGGGTGGGTGGCTGCCAGCTGCCGCCGGGTG
 TTTGGGAGGAGAAGTTGTATAACCCCCCCCACCCACCGACGGGTCGAGCGGGGGCCAC
 AlaThrAlaPheValGlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGly
 3601 CCGCTACTGCCCTTGTGGCGCTGGCTTAGCTGGCGCCATGGCAGTGTGGACTGG
 GCGATGACGGAAACACCGCGACCGAACGACCGCAGGGTACGCCGTACAACCTGACC
 LysValLeuIleAspIleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAla
 3661 GGAAGGTCTCATAGACATCCTTGCAGGGTATGGCGGGCGTGGCGGGAGCTTGTGG
 CCTTCCAGGAGTATCTGTAGGAACGTCCCATACCGCGCCCGCACCGCCCTCGAGAACACC
 PheLysIleMetSerGlyGluValProSerThrGluAspLeuValAsnLeuLeuProAla
 3721 CATTCAAGATCATGAGCGGTGAGGTCCCCCTCCACGGAGGACCTGGTCAATCTACTGCCCG
 GTAAGTTCTAGTACTGCCACTCCAGGGGAGGTGCCTCTGGACCAAGTTAGATGACGGGC

FIG. 32E

3781 IleLeuSerProGlyAlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHis
 CCATCCCTCGCCCCGGAGCCCTCGTAGTCGGCGTGGCTGTGCAGCAATACTGCGCCGGC
 GGTAGGAGAGCGGGCCCTGGGAGCATCAGCCGACCAGACACGTCGTTATGACGCGGCCG

 3841 ValGlyProGlyGluGlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArg
 ACGTTGGCCCGGGCGAGGGGGCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCC
 TGCAACCGGGCCCGCTCCCCGTCACGTACCTACTTGGCGACTATCGGAAGCGGGAGGG

 3901 GlyAsnHisValSerProThrHisTyrValProGluSerAspAlaAlaAlaArgValThr
 GGGGAAACCATGTTCCCCCACGCACTACGTGCCGGAGAGCAGTCAGCTGCCCGCTCA
 CCCCCCTGGTACAAAGGGGTGCGTGATGCACGGCCTCGCTACGTCGACGGCGCAGT

 3961 AlaIleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSer
 CTGCCATACTCAGCAGCCTCACTGTAACCCAGCTCCTGAGGCAGTCACCAGTGGATAA
 GACGGTATGAGTCGTCGGAGTGAATTGGTCGAGGACTCCGCTGACGTGGTCACCTATT

 4021 SerGluCysThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCys
 GCTCGGAGTGTACCACTCCATGCTCCGGTCTGGCTAACGGACATCTGGGACTGGATAT
 CGAGCCTCACATGGTGAGGTACGAGGCCAAGGACCATTCCCTGAGTACGGTGTGACGGAC

 4081 GluValLeuSerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGly
 GCGAGGTGTGAGCGACTTTAACCTGGTAAAGGCTAACGCTATGCCACAGCTGCC
 CGCTCCACAACACTGCTGAAATTCTGGACCGATTTCGATTGAGTACGGTGTGACGGAC

 4141 IleProPheValSerCysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMet
 GGATCCCCTTGTGTCCTGCCAGCGCGGGTATAAGGGGGCTGGCAGTGGACGGCATCA
 CCTAGGGGAAACACAGGACGGTCGCGCCCATATTCCCCCAGACCGCTCACCTGCCGTAGT

 4201 HisThrArgCysHisCysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArg
 TGCACACTCGCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAAAAACGGGACGATGA
 ACGTGTGAGCGACGGTGACACCTGACTCTAGTGAACCTGTACAGTTTGCCCTGCTACT

 4261 IleValGlyProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyr
 GGATCGCGTCCCTAGGACCTGCAGGAACATGTGGAGTGGACCTTCCCATTAAATGCC
 CCTAGCAGCCAGGATCTGGACGTCCTGTACACCTCACCTGGAAGGGTAATTACGGA

 4321 ThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgVal
 ACACCAAGGGCCCCCTGTACCCCCCTTCCTGCGCCGAACATCACGTTCGCGCTATGGAGGG
 TGTGGTGCCCCGGGACATGGGGGAAGGACGCGGCTTGATGTGCAAGCGCGATACTCCC

 4381 SerAlaGluGluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMet
 TGTCTGCAGAGGAATATGTGGAGATAAGGCAGGTGGGGACTTCAACTACGTGACGGGTA
 ACAGACGTCTCCTTACACCTTACCGTCCACCCCTGAAGGTGATGCACTGCCCAT

 4441 ThrThrAspAsnLeuLysCysProCysGlnValProSerProGluPhePheThrGluLeu
 TGACTACTGACAATCTCAAATGCCGTGCCAGGTCCCATGCCGAATTTCACAGAAAT
 ACTGATGACTGTTAGAGTTACGGGCACGGTCCAGGGTAGCGGGCTAAAAAGTGTCTTA

 4501 AspGlyValArgLeuHisArgPheAlaProProCysLysProLeuLeuArgGluGluVal
 TGGACGGGGTGCCTACATAGGTTGCGCCCCCTGCAAGCCCTGCTGCCGGAGGGAGG
 ACCTGCCCCACGCGGATGTATCCAACAGCGGGGGACGTTGGAAACGACGCCCTCCTCC

 4561 SerPheArgValGlyLeuHisGluTyrProValGlySerGlnLeuProCysGluProGlu
 TATCATTCAAGAGTAGGACTCCACGAATACCCGGTAGGGTCGCAATTACCTTGCAGCCCG
 ATAGTAAGTCTCATCCTGAGGTGCTTATGGGCCATCCCAGCGTTAATGGAACGCTCGGC

 4621 ProAspValAlaValLeuThrSerMetLeuThrAspProSerHisIleThrAlaGluAla
 AACCGGACGTGGCGTGTGACGCCATGCTCACTGATCCCTCCATATAACAGCAGAGG
 TTGGCCTGCACCGGACAACGTGAGGTACGAGTACTAGGGAGGGTATATTGTCGTC

 4681 AlaGlyArgArgLeuAlaArgGlySerProProSerValAlaSerSerAlaSerGln
 CGGCCGGCGAAGGTTGGCGAGGGGATCACCCCCCTGTGGCCAGCTCCTCGGCTAGCC
 GCCGGCCCGCTCCAACCGCTCCCTAGTGGGGGGAGACACCGGTCGAGGAGGCCGATCGG

 4741 LeuSerAlaProSerLeuLysAlaThrCysThrAlaAsnHisAspSerProAspAlaGlu
 AGCTATCCGCTCCATCTCAAGGCAACTTGACCCGCTAACCATGACTCCCTGATGCTG
 TCGATAGGCAGGTAGAGAGTTCCGTTGAACGTTGGGACTACGAC

FIG. 32F

Leu Ile Glu Ala Asn Leu Leu Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu
4801 AGCTCATAGAGGCCAACCTCCTATGGAGGCAGGAGATGGGCAGCAACATCACCAAGGGTTG
TCGAGTATCTCCGGTGGAGGATAACCTCCGTCTCACCGCCGTTGAGTGGTCCCCAAC

Ser Glu Asn Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp Glu
4861 AGTCAGAAAACAAAGTGGTGATTCTGGACTCCTCGATCCGCTTGTGGCGGAGGAGGAGC
TCAGTCTTTGTTCAACCCTAAGACCTGAGGAAGCTAGGCAGACCCGCTCTAACGGGGTCCGGG

Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg Phe Ala Gln Ala Leu
4921 AGCGGGAGATCTCGTACCCGAGAAATCCTGCGGAAGTCTCGGAGATTGCCCCAGGCC
TCGCCCTCTAGAGGCATGGCGCTTTAGGACGCCTCAGAGCCTCTAACGGGGTCCGGG

Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro Leu Val Glu Thr Trp Lys Lys Pro Asp
4981 TGCCCCTTGGCGCGGCCGGACTATAACCCCCCGCTAGTGGAGACGTGGAAAAAGCCCG
ACGGGCAAACCCGCGCCGGCCTGATATTGGGGGGCAGTACCTCTGACACCTTTGGGC

Tyr Glu Pro Pro Val Val His Gln Cys Pro Leu Pro Pro Lys Ser Pro Pro Val Pro
5041 ACTACGAACCACCTGTGGTCCATGGCTGTCGCTCCACCTCCAAAGTCCCCTCTGTGC
TGATGCTTGGTGGACACCAGGTACCGACAGGCGAAGGTGGAGGTTTCAAGGGGAGGACACG

Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu Ala
5101 CTCCGCCTCGGAAGAACGGACGGTGGTCTCACTGAATCAACCTATCTACTGCCTTGG
GAGGGCGGAGCCTCTCGCCTGCCACCAGGAGTGACTTAGTTGGGATAGATGACGGAAACC

Glu Leu Ala Thr Arg Ser Phe Gln Ser Ser Ser Thr Ser Gln Ile Thr Gln Asp Asn Thr
5161 CCGAGCTGCCACCAGAACGCTTGGCAGCTCCTCAACTTCCGGCATTACGGGCAGACAATA
GGCTCGAGCGGTGGTCTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCGCTGTTAT

Thr Thr Ser Ser Glu Pro Ala Pro Ser Gln Cys Pro Pro Asp Ser Asp Ala Glu Ser Tyr
5221 CGACAACATCCTCTGAGCCCGCCCTTCTGGCTGCCCGGACTCCGACGCTGAGTCCT
GCTGTTGAGGAGACTGGGCGGGGAAGACCGACGGGGGGCTGAGGCTGCGACTCAGGA

Ser Ser Met Pro Pro Leu Glu Gln Gln Pro Gln Asp Pro Asp Leu Ser Asp Gln Ser Trp
5281 ATTCCCTCCATGCCCGCCCTGGAGGGGGAGGCTGGGATCCGGATCTTAGCGACGGTCAT
TAAGGAGGTACGGGGGGACCTCCCCCTCGGACCCCTAGGCCTAGAACATCGCTGCCAGTA

Ser Thr Val Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr Ser
5341 GGTCAACGGTCAGTAGTGAGGCCAACCGGGAGGATGTCGTGCTGCTCAATGTCTTACT
CCAGTTGCCAGTCATCACTCCGGTTGCGCCTCACAGCACACGAGTTACAGAACATGA

Trp Thr Gln Ala Leu Val Thr Pro Cys Ala Ala Glu Gln Lys Leu Pro Ile Asn Ala
5401 CTTGGACAGGCGCACTCGTCACCCCGTGCAGCGGGAGAACAGAAACTGCCATCAATG
GAACCTGTCCCGTGTGAGCAGTGGGACCGCCTTGTCTTTGACGGTAGTTAC

Leu Ser Asn Ser Leu Leu Arg His His Asn Leu Val Tyr Ser Thr Thr Ser Arg Ser Ala
5461 CACTAAGCAACTCGTTGCTACGTACCAACATTGGGTGATTCCACCACTCACGCACTG
GTGATTGTTGAGCAACGATGCACTGGTAAACACATAAGGTGGTGGAGTGCCTAC

Cys Gln Arg Gln Lys Lys Val Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln
5521 CTTGCCAAAGGCAGAACGAAAGTCACATTGACAGACTGCAAGTCTGGACAGCCATTAC
GAACGGTTCCGTCTTCAGTGTAAACTGCTGACGTTCAAGACCTGTCGGTAATGG

Asp Val Leu Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser Val
5581 AGGACGTACTCAAGGAGGTTAAAGCAGCAGCGTCAAAAGTGAAGGCTAACCTGCTATCCG
TCTCGCATGAGTTCTCCAATTGTCGCGCAGTTTCACTTCCGATTGAAACGATAGGC

Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys Phe Gln Tyr Gln Ala
5641 TAGAGGAAGCTTGCAGCCTGACGCCCCACACTCAGCCAAATCAAGTTGGTTATGGGG
ATCTCCTTCGAAACGTCGGACTGCAGGGTTAGGTTCAAACCAATACCCC

Lys Asp Val Arg Cys His Ala Arg Lys Ala Val Thr His Ile Asn Ser Val Trp Lys Asp
5701 CAAAAGACGTCCGTTGCCATGCCAGAACGCGTAACCCACATCAACTCCGTGTGGAAAG
GTTTCTGCAGGCAACGGTACGGTCTTCCGGCATTGGGTGAGTTGAGGCAACCTTTC

Leu Leu Glu Asp Asn Val Thr Pro Ile Asp Thr Ile Met Ala Lys Asn Glu Val Phe
5761 ACCTTCTGAAAGACAATGTAACACCAATAGACACTACCATGGCTAACGAGGTT
TGGAAAGACCTCTGTTACATTGTGGTTATCTGTGATGGTAGTACCGATTCTGCTCCAAA

FIG. 32G

CysValGlnProGluLysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeu
5821 TCTCGTTCAGCCTGAGAAGGGGGTCGTAAAGCCAGCTCGTCATCGTTCCCCGATC
AGACGCAAGTCGGACTCTTCCCCCAGCATCGTCAGCAGAGTAGCACAAGGGCTAG
GlyValArgValCysGluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAla
5881 TGGGCCTGCGCGTGTGCGAAAAGATGGCTTGACGACGTGGTTACAAAGCTCCCCTGG
ACCCGACCGCCACACGCTTTCTACCGAACATGCTGCACCAATGTTGAGGGGAACC
ValMetGlySerSerTyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuVal
5941 CCGTGATGGGAAGCTCTACGGATTCCAATACTCACCAAGGACAGCGGGTTGAATTCTCG
GGCACTACCCCTCGAGGATGCCATAAGGTTATGAGTGGTCTGTCGCCAACCTAAGGAGC
GlnAlaTrpLysSerLysLysThrProMetGlyPheSerTyrAspThrArgCysPheAsp
6001 TGCAAGCGTGGAAAGTCCAAGAAAACCCCAATGGGGTCTCGTATGATACCGCTGCTTG
ACGTTCGCACCTCAGGTTCTTGGGTTACCCCAAGAGCATACTATGGCGACGAAAC
SerThrValThrGluSerAspIleArgThrGluGluAlaIleTyrGlnCysCysAspLeu
6061 ACTCCACAGTCACTGAGAGCGACATCCGTACGGAGGAGGCAACTACCAATGTTGTGACC
TGAGGTGTCAGTGACTCTCGCTGTAGGCATGCCCTCCGTTAGATGGTTACAACACTGG
AspProGlnAlaArgValAlaIleLysSerLueThrGluArgLeuTyrValGlyGlyPro
6121 TCGACCCCCAAGCCCGCTGGCATCAAGTCCCTACCGAGAGGGCTTTATGTTGGGGGCC
AGCTGGGGGTTCGGGCGCACCGGTAGTCAGGGAGTGGCTCTCCGAAATACAACCCCCGG
LeuThrAsnSerArgGlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeu
6181 CTCTTACCAATTCAAGGGGGAGAACTGCGGCTATCGCAGGTGCCGCGAGCGGGTAC
GAGAATGGTTAACGCCCCCTTGACGCCGATAGCGTCCACGGCGCGCTGCCGCATG
ThrThrSerCysGlyAsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAla
6241 TGACAACTAGCTGTGTAACACCCCTCACTGCTACATCAAGGCCGGCAGCCGTGAG
ACTGTTGATCGACACATTGTGGGAGTGAACGATGTAGTCCGGCCGTCGGACAGCTC
AlaGlyLeuGlnAspCysThrMetLeuValCysGlyAspAspLeuValValIleCysGlu
6301 CGCGAGGGCTCCAGGACTGCACCATGCTCGTGTGGCGACGACTTAGTCGTTATCTGTG
GGCGTCCCAGGTCTGACGTGGTACGAGCACACACCCTGCTGAATCAGCAATAGACAC
SerAlaGlyValGlnGluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArg
6361 AAAGCGCGGGGTCCAGGAGGACCGCGAGCCTGAGAGCCTCACGGAGGCTATGACCA
TTTCGCGCCCCAAGGTCTCTCGCGCGCTCGGACTCTCGGAAGTGCCTCGATACTGGT
TyrSerAlaProProGlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSer
6421 GGTACTCCGCCCCCTGGGGACCCCCCAACAGAAATCGACTTGGAGCTCATAACAT
CCATGAGGGGGGGGGACCCCTGGGGGGTGTGGCTTATGCTAACCTCGAGTATTGTA
CysSerSerAsnValSerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThr
6481 CATGCTCCTCCAACGTGTCAGTCGCCACGACGGCGCTGGAAAGAGGGCTACTACCTCA
GTACGAGGAGGTTGACAGTCAGCGGGTGTGCCGCGACCTTCTCCAGATGATGGAGT
ArgAspProThrThrProLeuAlaArgAlaAlaTrpGluThrAlaArgHisThrProVal
6541 CCCGTGACCCCTACAACCCCCCTCGCGAGAGCTCGTGGGAGACAGCAAGACACACTCCAG
GGGCACTGGATGTTGGGGAGCGCTCGACGCCCTCTCGTTCTGTGAGGTC
AsnSerTrpLeuGlyAsnIleIleMetPheAlaProThrLeuTrpAlaArgMetIleLeu
6601 TCAATTCTGGCTAGGCAACATAATCATGTTGCCACACTGTGGCGAGGATGATAC
AGTTAAGGACCGATCGTTGATTAGTACAAACGGGGTGTGACACCCGCTCTACTATG
MetThrHisPhePheSerValLeuIleAlaArgAspGlnLeuGluGlnAlaLeuAspCys
6661 TGATGACCCATTCTTACGGCTCTTATAGCCAGGGACCAGCTGAACAGGCCCTCGATT
ACTACTGGTAAAGAAATCGCAGGAATATCGGTCCCTGGTCGAATTGTCCGGAGCTAA
GluIleTyrGlyAlaCysTyrSerIleGluProLeuAspLeuProProIleIleGlnArg
6721 GCGAGATCTACGGGGCTGCTACTCCATAGAACCACTTGATCTACCTCCATCATTCAA
CGCTCTAGATGCCCGGACGATGAGGTATCTGGTGAACTAGATGGAGGTTAGTAAGTTT
Leu
6781 GACTC
CTGAG

FIG. 33

Lane Number	Chimp Reference Number	Infection Type	Sample date (days) (0=inoculation day)	ALT (alanine aminotransferase level in sera) μU/ml
1	1	NANB	0	0
2	1	NANB	76	71
3	1	NANB	118	19
4	1	NANB	154	N/A
5	2	NANB	0	0
6	2	NANB	21	52
7	2	NANB	73	13
8	2	NANB	138	N/A
9	3	NANB	0	8
10	3	NANB	43	205
11	3	NANB	53	14
12	3	NANB	159	6
13	4	NANB	-3	11
14	4	NANB	55	132
15	4	NANB	83	N/A
16	4	NANB	140	N/A
17	5	HAV	0	4
18	5	HAV	25	147
19	5	HAV	40	18
20	5	HAV	268	5
21	6	HAV	-8	N/A
22	6	HAV	15	100
23	6	HAV	41	10
24	6	HAV	129	N/A
26	7	HAV	0	7
27	7	HAV	22	83
28	7	HAV	115	5
29	7	HAV	139	N/A
30	8	HAV	0	15
31	8	HAV	26	130
32	8	HAV	74	8
33	8	HAV	205	5
34	9	HBV	-290	N/A
35	9	HBV	379	9
36	9	HBV	435	6
37	10	HBV	0	8
38	10	HBV	111-118 (pool)	96-156 (pool)
39	10	HBV	205	9
40	10	HBV	240	13
41	11	HBV	0	11
42	11	HBV	28-56 (pool)	8-100 (pool)
43	11	HBV	169	9
44	11	HBV	223	10

FIG. 33A

CHIMPS

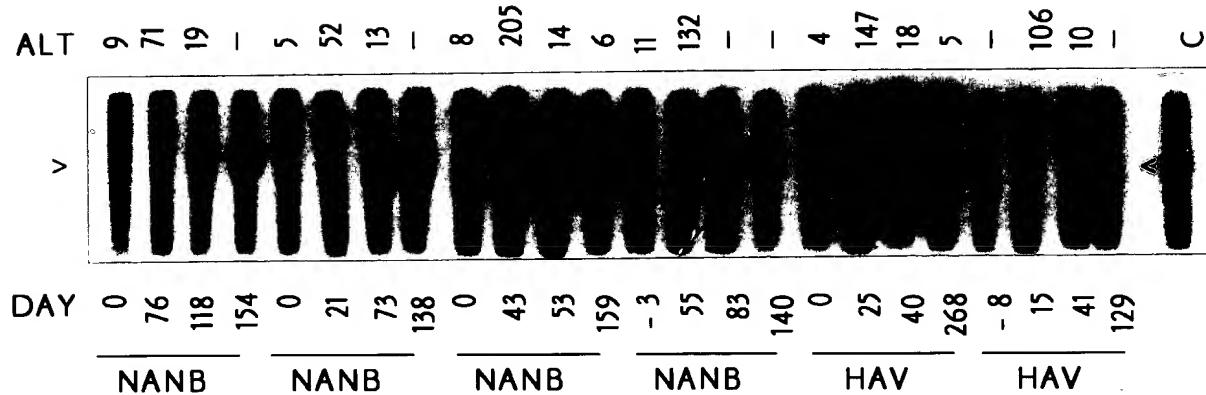


FIG. 33B

CHIMPS

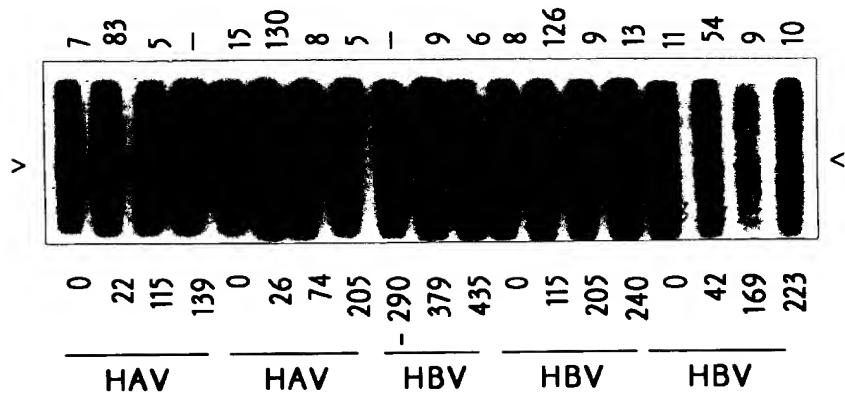


FIG. 34

Lane Number	Patient Reference Number	Diagnosis	ALT Level (μ /ml)
1	1 ¹	NANB	1354
2	1 ¹	NANB	31
3	2 ¹	NANB	14
4	2 ¹	NANB	79
5	2 ¹	NANB	26
6	3 ¹	NANB	78
7	3 ¹	NANB	87
8	3 ¹	NANB	25
9	4 ¹	NANB	60
10	4 ¹	NANB	13
11	5 ¹	NANB	298
12	5 ¹	NANB	101
13	6 ¹	NANB	474
14	6 ¹	NANB	318
15	7 ¹	NANB	20
16	7 ¹	NANB	163
17	8 ¹	NANB	44
18	8 ¹	NANB	50
19	9	NANB	N/A
20	10	NANB	N/A
21	11	NANB	N/A
22	12	Normal	N/A
23	13	Normal	N/A
24	14	Normal	N/A
26	30174	Normal	N/A
27	30105	Normal	N/A
28	30072	Normal	N/A
29	30026	Normal	N/A
30	30146	Normal	N/A
31	30250	Normal	N/A
32	30071	Normal	N/A
33	15	AcuteHAV	N/A
34	16	AcuteHAV	N/A
35	17	AcuteHAV	N/A
36	18	AcuteHAV	N/A
37	48088	AcuteHAV	N/A
38	47288	AcuteHAV	N/A
39	47050	AcuteHAV	N/A
40	46997	AcuteHAV	N/A
41	19	Convalescent HBV (anti-HBSag+ve; anti-HBCag+ve)	N/A
42	20	(anti-HBSag+ve; anti-HBCag+ve)	N/A
43	21	(anti-HBSag+ve; anti-HBCag+ve)	N/A
44	22	(anti-HBSag+ve; anti-HBCag+ve)	N/A
45	23	(anti-HBSag+ve; anti-HBCag+ve)	N/A
46	24	(anti-HBSag+ve; anti-HBCag+ve)	N/A
47	25	(anti-HBSag+ve; anti-HBCag+ve)	N/A
48	26	(anti-HBSag+ve; anti-HBCag+ve)	N/A
49	27	(anti-HBSag+ve; anti-HBCag+ve)	N/A

¹Sequential serum samples were assayed from these patients

FIG. 34A

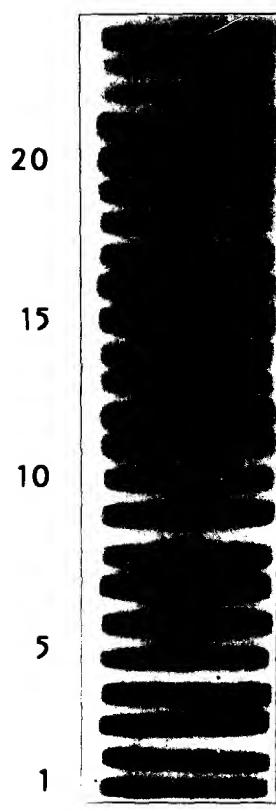


FIG. 34B

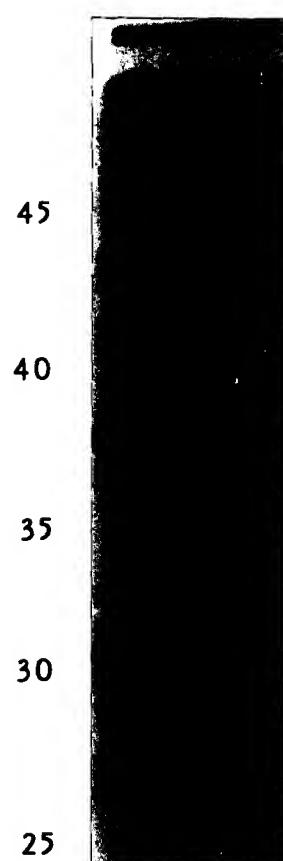


FIG. 35

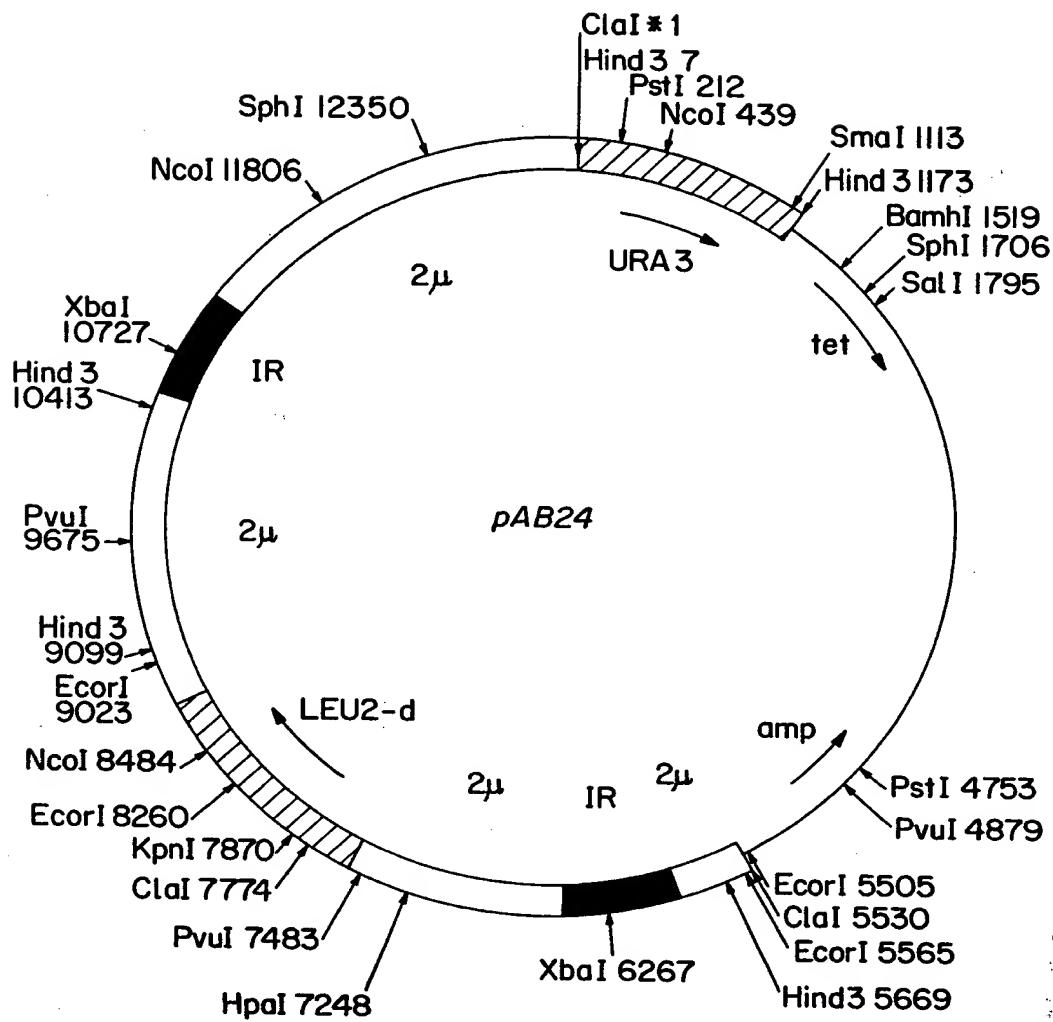


FIG. 36A

-----SOD-----[COOH][--adaptor---][NANB polypeptide>
 1 AlaCysGlyValIleGlyIleAlaGlnAsnLeuGlyIleArgAspAlaHisPheLeuSer
 1 GCTTGTTGGTGTAAATTGGGATGCCAGAATTGGGAATTGGGATGCCACTTCTATCC
 CGAACACCACTTAACCCTAGCGGGTCTAAACCCCTAACGCCCACGGGTGAAAGATAGG
 >>>>>>>>>>>>>>>>
 61 GinThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCys
 CAGACAAAGCAGAGTGGGGAGAACCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTGC
 GTCTGTTCTCGTCTACCCCTCTTGAAGGAATGGACCATCGCATGGTTGGTGGCACACG
 121 AlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeu
 GCTAGGGCTCAAGCCCTCCCCATCGTGGGACCAGATGTGGAAAGTGTGTTGATTGCCTC
 CGATCCCAGTCGGGGAGGGGGTAGCACCCCTGGTCTACACCTCACAAACTAACGGAG
 181 LysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGlu
 AAGCCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTTAGAATGAA
 TTCGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGCGACAAGTCTTACTT
 241 IleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGlu
 ATCACCCCTGACGCACCCAGTCACAAATACATCATGACATGCTGCGGCCGACCTGGAG
 TAGTGGGACTGCGTGGTCAGTGGTTATGTAGTACTGTACGTACAGCCGGCTGGACCTC
 301 ValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCys
 GTCGTCACGAGCACCTGGGTGCTCGTGGCAGCGTCTGGCTGCTTGGCCGCGTATTGC
 CAGCAGTGCCTGTGGACCCACGAGCAACCGCCGAGGACCGACGAAACCGGGCGATAACG
 361 LeuSerThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIle
 CTGTCACAGGCTGCGTGGTCAGTGGCAGGGTCTGGCCGAGCAGCTGGCCGCGTATTGC
 GACAGTTGTCGACGCACCAAGTATCACCCGTCAGCAGAACAGGCCCTCGGCCGTTAG
 421 IleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHis
 ATACCTGACAGGGAAGTCCCTACCGAGAGTTCGATGAGATGAGAAGAGTGCTCTCACGAC
 TATGGACTGTCCTCAGGAGATGGCTCTCAAGCTACTCACCTCTACGAGAGTCGTG
 481 LeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGly
 TTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTCAGCAGAACAGGCCCTCGGC
 AATGGCATGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAGTTGCTTCCGGGAGCCG
 541 LeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrp
 CTCCCTGACAGCCGCGTCCCGTCAGGCAGAGGTTATGCCCTGCTGTCCAGACCAACTGG
 GAGGACGTCGGCGCAGGGCAGTCGTCAGCAGGGACGACAGGTCTGGTTGACC
 601 GlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyr
 CAAAAAACTCGAGACCTTCTGGCGAAGCATATGTGAACTTCATCAGTGGGATAACAATAC
 GTTTTGAGCTCTGGAAAGACCCGCTCGTATACACCTGAAGTAGTCACCCATGTTATG
 661 LeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThr
 TTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTACA
 AACCGCCCGAACAGTTGCGACGGACCATTGGGGCGGTAAAGAAGTAACCGAAAATGT
 721 AlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGly
 GCTGCTGTACCGAGCCACTAACCACTAGCCAAACCCCTCCTCAACATATTGGGGGGGG
 CGACGACAGTGGTCGGGTGATTGGTAGTCGGTTGGGAGGAGAAGTTGTATAACCCCCCCC
 781 TrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeu
 TGGGTGGCTGCCAGCTCGCCGCCGGTGCCTACTGCCTTGTGGCGCTGGCTTA
 ACCCACCGACGGGTGAGCGGGGGGCCACGGCGATGACGGAAACACCCGCGACCGAAT

FIG. 36B

AlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGly
841 GCTGGCGCCGCCATCGGCAGTGTGGACTGGGAAGGTCTCATAGACATCCTGCAGGG
CGACCGCGGCGGTAGCCGTACAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCCC

TyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValPro
901 TATGGCGCGGGCGTGGCGGGAGCTTGTGGATTCAAGATCATGAGCGGTGAGGTCCCC
ATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGGG

SerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValVal
961 TCCACGGAGGACCTGGTCAATCTACTGCCGCCATCCTCTGCCCGGAGGCCCTCGTAGTC
AGGTGCCTCCTGGACCAGTTAGATGACGGGCGGTAGGAGAGCAGGGCCTGGAGCATCAG

GlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGln
1021 GGC GTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGGGCAGTGCAG
CCGCACCAAGACACGTCGTTATGACGCCCGTGCAACCGGGCCGCTCCCCGTCACGTC

TrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProValHisHis
1081 TGGATGAACCGGCTGATAGCCTTCGCCTCCGGGGAAACCATGTTCCCCAGTCCATCAT
ACCTACTTGGCGACTATCGGAAGCGGAGGGCCCCCTGGTACAAAGGGTCAGGTAGTA
-----]
LysArgOP
1141 AAGCGTTGACGCTCCTACGGGTGGACTGTGGAGAGACAGGGCACTGCTAAGGCCAAAT
TTCGCAACTGCGAGGGATGCCACCTGACACCTCTGTCCCGTGACGATTCCGGGTTA

1201 CTCAGCCATGCATCGAGGGGTACAATCGTATGGCCAACAACATAGCGCTACGTAAAGTC
GAGTCGGTACGTAGCTCCCATGTTAGGCATACCGGTTGTTGATCGCGCATGCAATTCAAG

1261 TCCTTCTCGATGGTCCATACCTTAGATGCGTTAGCATTAATCCGAATT
AGGAAAGAGCTACCAGGTATGGAATCTACGCAATCGTAATTAGGCTTAAG

FIG. 37A



FIG. 37B

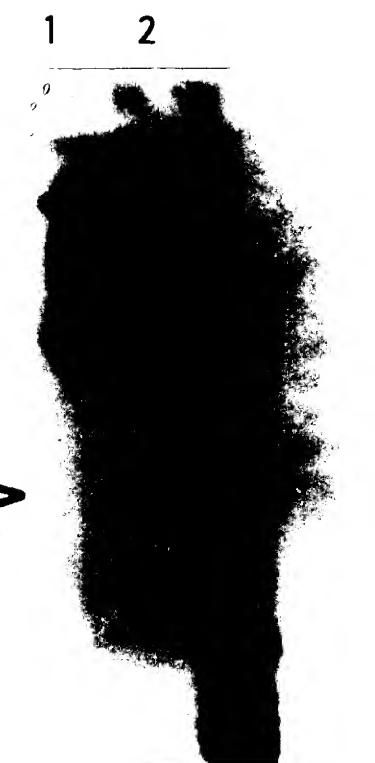


FIG. 38

1 2 3 4

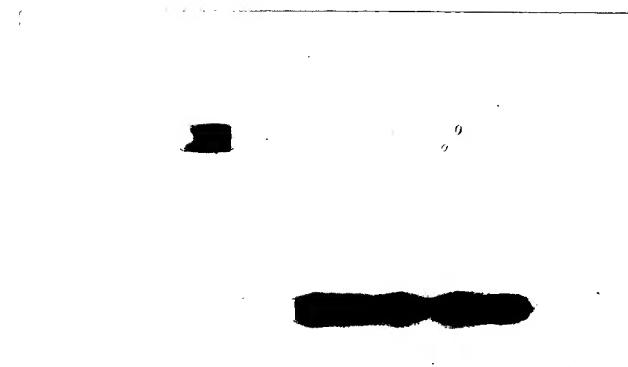


FIG. 40

1 2 3 4

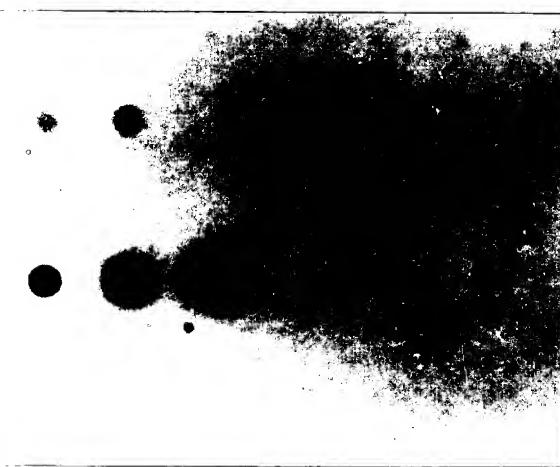


FIG. 39

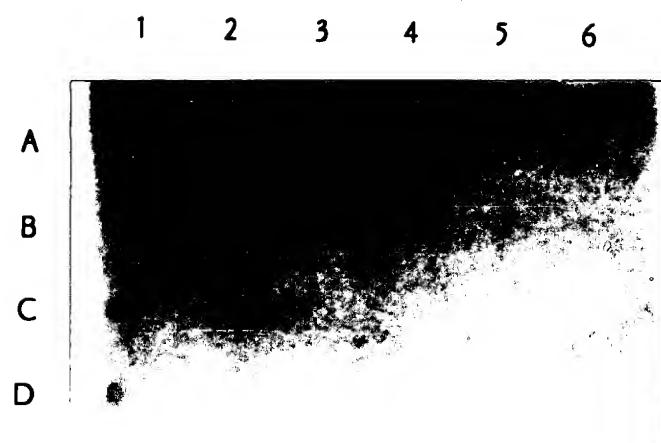


FIG. 41A

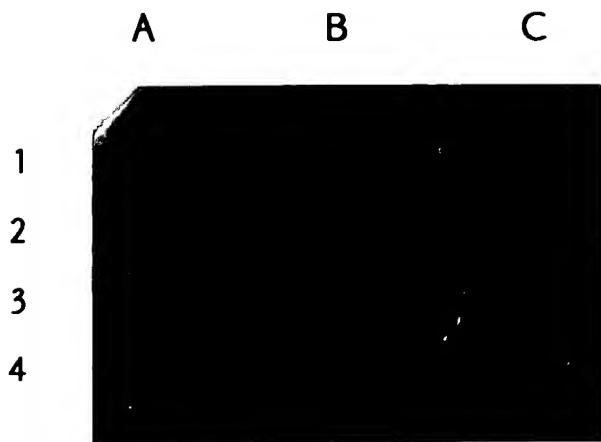


FIG. 41B

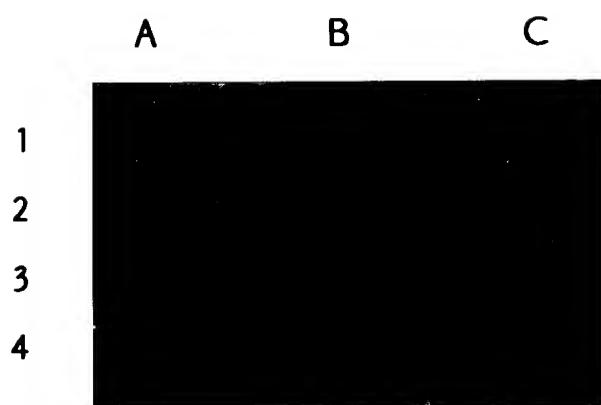


FIG. 42A

HCV	10	20	30	40	50		
	EYVVLLFLLLADARVCSCLWMMLLISQAEEAALENLVILNAASLAGTHGLVSFLVFFCFA						
MNWVD1	AVSFVTLITGNMSFRDLGRVMVMVGATMTDDIGMGVTYLALLAAFKVRPTFAAGLLLRLK	130	140	150	160	170	180
HCV	60	70	80	90	100	110	
	WYLKGKWVPGAVYTIFYGMWPLLLLLALPQRAYALDTEVAASC GGVLVGLMALTLSPYY						
MNWVD1	TSKELMMTTIGIVLLSQSTIPE TILE LTDALALGMMVLKMVRKMEKYQLAVT IMAILCVP	190	200	210	220	230	240
HCV	120	130	140	150	160	170	
	KRYISWCWWLQYFLTRVEAQLHVVIPPLNVRRGRDAVILLMC AVHPTLVFDITKL LAV						
MNWVD1	NAVILQNAWKVSCTILAVVSVSPLFLTSSQQKADWIPLALTIKGLNPTAIF-LTTL SRIN	250	260	270	280	290	
HCV	180	190	200	210	220	230	
	FGPLWILQASLLKVPYF-VRVQGLLRF-CALARKMIGGHYYQMVI IKLGALTGT VVNH						
MNWVD1	KKRSWPLNEAIMA VGMVSI LASSLLKNDIPMTGPLVAGGLLTVCYV-LTGRSADLELE R	300	310	320	330	340	350
HCV	240	250	260	270	280	290	
	TPLRDWAHNGLRDLAVAVEPVVFSQMETKLITWGADTAACGDI INGLPVSARRGREILLG						
MNWVD1	ÅDVK-WEDQAEI SGSSPILSITI SÉ-DGSM SÍKNÉÉÉQT LÍLIRT GLLVÍSG---LFP	360	370	380	390	400	410
HCV	300	310	320	330	340	350	
	PADGMVSKGWRL LAPITAYAQQT RGLLGCIITS LTGRDKNQVEGEQIVSTA AQTFLATC						
MNWVD1	VSIPI TAA AWYLWEVKKQRÁGV LWDVPSPPPV GKAELE DGA YRIKQKGILGYSQI GAGVY	420	430	440	450	460	470
HCV	360	370	380	390	400	410	
	INGVCWT VYHGAGTRTI ASPKGPVIQMYTNVDQDLV--- GWPAPQGSRSLTPCTCGSSD						
MNWVD1	KEGTFHTMWHVTRGAVLMHKGKRIEPSWADVKKD L VSCGGGWKLEG EWKE GE EEV QVLA E	480	490	500	510	520	530
HCV	420	430	440	450	460	470	
	LYLVTRHADVIPVRRRGDSRG SLLSPR PISY LGSSGGPLLCPAGH AVGIFRAAV CTRGV						
MNWVD1	PGKNPRAVQTKPGLFKT N-ÄGTIGAVSLDFSPGTSGSP II DKKGKVVG L YGN GVVTRSG	540	550	560	570	580	590

FIG. 42B

HCV	480	490	500	510	520	530
MNWVD1	AKAVDFIPVENLETTMRSPVFTDNSSPPVVPQSFQVAHLHAPTGSGKS--TKVPAAYAAQ					
	ÄYVSÄIAQTEK--SIEDNPEIÉDDIFRK---RKLTIMDLHPGÄGKTÄRYLPÄIVRGAIKR					
	600	610	620	630	640	
HCV	540	550	560	570	580	
MNWVD1	GYKVVLNLNP--VAATLGFGAYMSKAHGIDPNIRTGVRTITGSPITYSTYGKFLADGGC					
	GLRTLILAPTRVVAÄEMEEÄLRLGLPIRYQTÄPÄIRÄEHTGREIÄVDLMCHÄÄFTMRLL-SPV					
	650	660	670	680	690	700
HCV	590	600	610	620	630	640
MNWVD1	SGGAYDIIICDECHSTDATSI ^X LIGIGTVLDQAETAGARLVVLATATPPGSVTVPHPNIEEV					
	RVPNYNL ^V IIMDÄAHFTDPÄSIAÄRGYIÄTRVÉ-MGÄAAGIFMTATPPGSRD-PFPQSNA ^P					
	710	720	730	740	750	760
HCV	650	660	670	680	690	700
MNWVD1	ALSTTGEIPFYGKAIPLEVIKGGRHLIFCHSKKKCDELAALKVALGINAVAYYRGLDVSV					
	IMDÄÄREIÄPERSWSSGHEWVTDFKGKTVWFVPSIKAGNDTAACLRKNGKKVTQLSRKTFD					
	770	780	790	800	810	820
HCV	710	720	730	740	750	760
MNWVD1	IPTSGDVVVVATDALMTGYTGDFDSVIDCNTCVTQTVDFSLDPTFTIETITLPQDAVSRT					
	SEYVKTRTNWDNFVTTDISEMGANFKAERVIDPRRCMKPVILTDGEERVILAGPMPVTH					
	830	840	850	860	870	880
HCV	770	780	790	800	810	820
MNWVD1	QRRGRTGRGKPGIYRFVAPGERPSGMFDSSVLCECYDAGCAWYELTPAETTVRLRAYMNT					
	SS					

FIG. 43

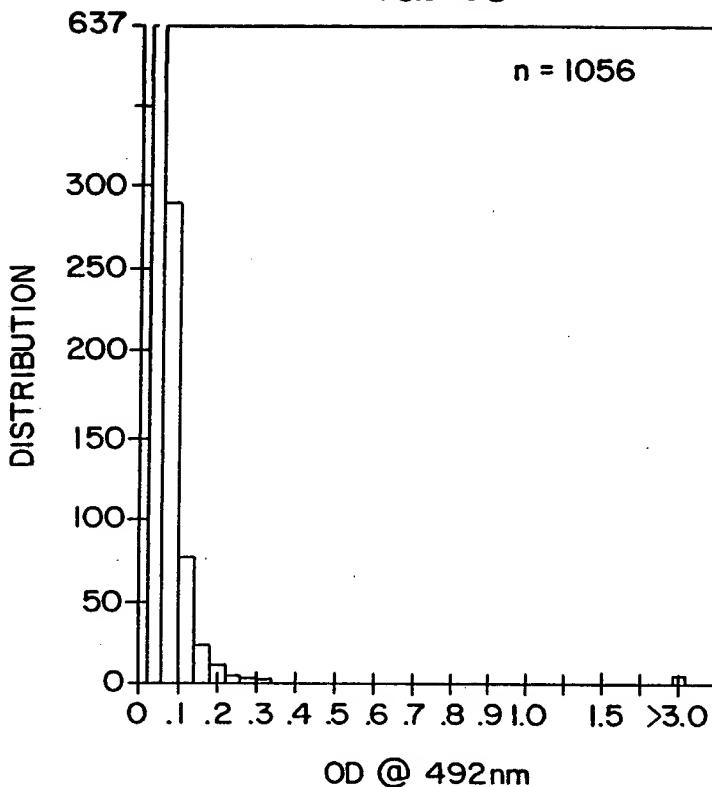


FIG. 44

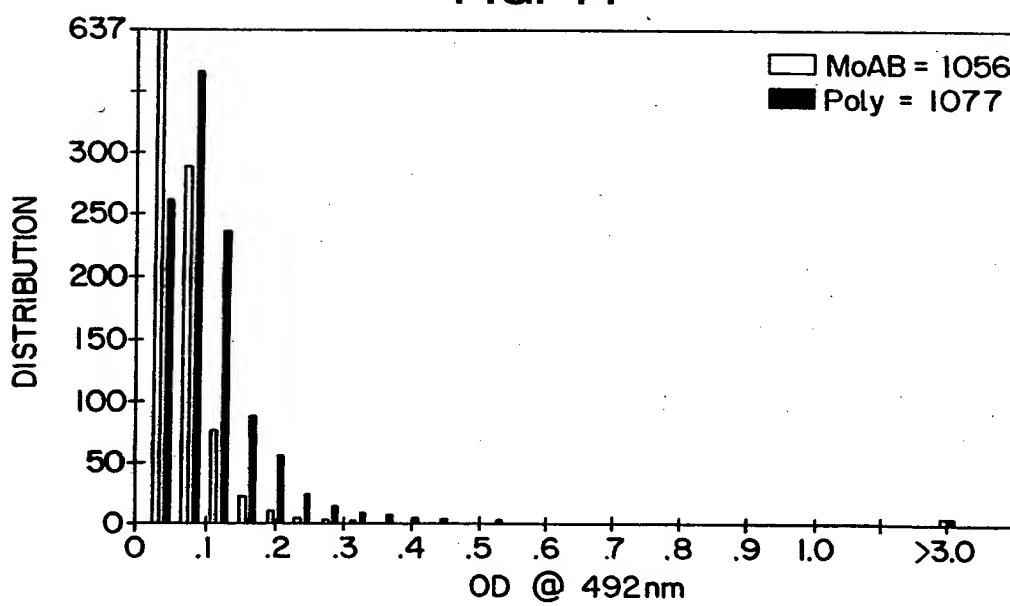


FIG. 45

<u>Name</u>	<u>Common Sequence</u>	<u>Variable Sequence</u>
5'-3-1	AAGCTTGATCGAATT	CGATCTTGC
-2		CGATCCTGC
-3		CGATCATGC
-4		CGATCGTGC
-5		CGAAAGTTGC
-6		CGAAGCTGC
-7		AGATCTTGC
-8		AGATCCTGC
-9		AGATCATGC
-10		AGATCGTGC
-11		AGAAGTTGC
-12		AGAAGCTGC
-13		CGATCTTGT
-14		CGATCCTGT
-15		CGATCATGT
-16		CGATCGTGT
-17		CGAAAGTTGT
-18		CGAAGCTGT
-19		AGATCTTGT
-20		AGATCCTGT
-21		AGATCATGT
-22		AGATCGTGT
-23		AGAAGTTGT
-24		AGAAGCTGT
-25		CGCTCTTGC
-26		CGCTCCTGC
-27		CGCTCATGC
-28		CGCTCGTGC
-29		CGCAGTTGC
-30		CGCAGCTGC
-31		CGCTCTTGT
-32		CGCTCCTGT
-33		CGCTCATGT
-34		CGCTCGTGT
-35		CGCAGTTGT
-36		CGCAGCTGT

FIG. 46A

GlyCysProGluArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGly
1 CAGGCTGTCCCTGAGGGCTAGCCAGCTGCCGACCCCTTACCGATTTCGACCAAGGGCTGGG
GTCCGACAGGACTCTCCGATGGTGACGGCTGGGAATGGCTAAACTGGTCCCACCC

ProleSerTyrAlaAsnGlySerGlyProAspGlnArgProTyrcysteineHistYrPro
61 GCCCTATCAGTTATGCCAACCGGAAGGGCCCCGACCAGCGCCCCCTACTGCTGGCACTACC
CGGGATAAGTCAAATACGGTTGCCTTGCCTGGCTGGTGGGGATGACGACCGTGTGATGG

ProLysProCysGlyIleValProAlaLysSerValCysGlyProvalTyrcysPheThr
121 CCCAAACCTTGGTATTGTGCCGGTAAACACGGCCATTAACACGGGGCTTCTCACACACACCAGGCAATAACCGAACT
GGGGTTTGGAACGGCCATTAACACGGGGCTTCTCACACACACCAGGCAATAACCGAACT

ProSerProValValGlyThrThrAspArgSerGlyAlaProThrYrSerTrpGly
181 CTCCCAGCCCCGGTGGTGGAACGACCGAACGGTGGGGCCACCTAACGCTGGG
GAGGGTCCGGGACCAACCACCCCTTGCTGGTCCAGGCCAGGGGGTGGATGTCGACCC

GluAsnAspThrAspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPhe
241 GTGAAAATGATAACGGACGTCTCGTCCTTAACAATAACAGGCCACGGCTGGCAATTGGT
CACTTTACTATGCCCTGCAGAACGAGGAATTGTTATGGTCGGTGGCGACCCGGTTAACCA

GlyCysThrTrpMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
301 TCGGTTGTTACCTGGATGAACCTCAACTGGATTTCACCAAAAGTGTGGGAGGGCCCTCCTGTG
AGCCAACATGGACCTACTTGAGTTGACCTAACGCTAACAGTGGTTCAACACGGCTAACACGGAAACAC

FIG. 46B

IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysIlePro
361 TCATGGAGGGGGGGCAACAAACACCCCTGCACTGCCACTGATTGCTTCCGCAAGGCATC
AGTAGGCCCTCCCCGCCGTGTTGGGACGTGACGGGTGACTAACGAAGGCCGTTCTGTAG

AspAlaThrTyrSerArgCysGlySerglyProTrpIleThrProArgCysLeuValAsp
421 CGGACGCCACATACTCTGGTGGCTCCGGTCCCTGGATCACACCCCAGGTGCGCTGGTCG
GCCTGGGGTGTATGAGGCCACGGGACCTAGTGTGGTCCACGGGACCCAGC

TyrProTyArgLeuTrpHisTyrProCysThrIleAsnTyrThrIlePheLysIleArg
481 ACTACCCGTATGGCTTGGCATTTATCCTGTACCATCAACTACACTATTTAAATCA
TGATGGCATATCCGAAACCGTAATAAGAACATGGTAGTTGATGTGATAAATTTTAGT

MetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGlu
541 GGATGTACGTGGGAGGGGTGAGCACAGGCTGGAAAGCTGCCACTGGACCCGGCG
CCTACATGCACCCCTCCCCAGCTCGTGTCCGACCTTCGACGGACGTTGACCTGGCCCGC

ArgCysAspLeuGluAspArgSerGluLeuSerProLeuLeuSerProAlaLeuSerThrGlyLeuIle
601 AACGTTGGCGATCTGGAAGATAAGGACAGGTCCGAGCTCAGCCCCGTACTGCTGACCACTA
TTGCAAACGCTAGACCTTCTATCCCTGTCCAGGGCTCGAGTGGCAATGACGACTGGTGTAT

GlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIle
661 CACAGTTGGCAGGTCCGGTGTCCATACAACCCCTGGCAAGCCTTGTCCACCGGCCCTCA
GTGTCAACCGTCCAGGGCACAAAGGAAGTGTGGAACAGGTGGCCGAGT

FIG. 46C

Overlap with Combined ORF of DNAs 12f through 15e-----
HisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyValGlySerSerIleAla
721 TCCACCTCCACCAAGAACATTGTGGACGTGCAGTACTTGTAACGGGTGGGTCAAGCATCG
AGTTGGAGGTGGTCTTGTAAACACCTGCACGTCACTGAACATGCCACCCCCAGTTCGTAGC

SerTrpAlaIleLysTrpGluTyrValValLeuLeuPheLeuLeuAlaAspAlaArg
781 CGTCCTGGCCATTAAAGTGGAGTACGTGGCTCCTGCCTGCTTCTGCTTCCTGCAGACGGCG
GCAGGACCCGGTAATTCAACCCCTCATGCAGCAGGAGACAAGGAAGACGAACGTC

ValCysSerCysLeuTrpMetMetLeuIleSerGlnAlaGluAlaAlaLeuGluAsn
841 GCGTCTGCTCCTGCTTGTGGATGATGCTACTCATATCCCAAGGGAAAGCGGCTTGGAGA
CGCAGACGGAGGACGAACACCTACTACGATGAGTATAAGGGTTGCCCTGCCGAAACCTCT

LeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuVal
901 ACCTCGTAATACTTAATGCAGCATCCCTGGGGACGGCACGGTCTGTATCCTTCCTCG
TGGAGCATTATGAAATTACGTGCTAGGGACCGGGCTGCCGTGCCAGAACATAGGAAGGAGC

PhePheCysPheAlaIleTrpTyrLeuLysTrpValProGlyAlaValTYrThrPhe
961 TGGTCTTCTGCTTGCATGGTATCTGAAGGGTAAGTGGGTGCCGGAGCGGTCTACACCT
ACAAGAACGAAACGTACCATAGACTTCCCATTACCCACGGGCCTCGCCAGATGTGGA

FIG. 46D

TyrglyMetTrpProLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeu
1021 TCTACGGGATGTGGCCTCTCCTGCTCCTGTTGGCGTGGCCAGGGTACGGCG
AGATGCCCTAACCGGAGGGAGGACGAGGACAACCGCAACGGCATGGCG

AspThrGluValAlaAlaSerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThr
1081 TGGACACGGAGGTGGCCGGTGGTGGGGTGTGTTCTCGTCGGGTGATGGCGCTAA
ACCTGTGCCCTCACCGGCAGCACACGCCAACACAAGGAGCAGCCAAACTACGGCATT

LeuSerProTyryTyrylSerTrpCysLeuTrpTrpLeuGlnTyrPheLeu
1141 CTCTGTACCATATTACAAAGCGCTATATCAGCTGGTGGCTTCAGTATTTC
GAGACAGTGGTATAATGTTGCCGATAATAGTCGACACCGAACACCACGAAGCTAAAG

ThrArgValGluAlaGlnLeuHisValTrpIleProProLeuAsnValArgGlyGlyArg
1201 TGACCAAGTGGAAAGCGCAACTGCACGTGGATCCCCCTCAACGTCGGAGGGGG
ACTGGTCTCACCTTGCGTTGACGTGCACACCTAACAGACATGTGGCTGAGACCTAAACTGTAGTGGT

AspAlaValIleLeuMetCysAlaValHisProThrLeuValPheAspIleThrLys
1261 GCGACCGCTGTCATCTTACTCATGTTGGCTGACACCCGACTCTGGTATTGACATACCA
CGCTGGCACAGTAGAATGAGTACACGACATGTGGCTGAGACCTAACAGCTAAC

LeuLeuAlaValPheGlyProLeuTrpIleLeuGlnAla
1321 AATTGCTTGCGCTCTGGACCCCTTGGATTCAGCCAG
TTAACGACGACGGCAGAAGCTGGGAAACCTAAGAAAGTCCGGTC

FIG. 47A

1 GlyCysProGluArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGly
 CAGGCTGTCCTGAGAGGCTAGCAGCTGCCGACCCCTTACCGATTGACCAGGGCTGG
 GTCCGACAGGACTCTCGATCGTCGACGGCTGGGAATGGCTAAAACGGTCCCACCC

 61 ProIleSerTyrAlaAsnGlySerGlyProAspGlnArgProTyrCysTrpHisTyrPro
 GCCCTATCAGTTATGCCAACGGAAAGCGGGCCCCGACCAGCAGCCTACTGCTGGCACTACC
 CGGGATAGTCAATACGGTTGCCCTCGCCGGGCTGGTCGCGGGATGACGACCGTGATGG

 121 ProLysProCysGlyIleValProAlaLysSerValCysGlyProValTyrCysPheThr
 CCCCAAAACCTTGCCTGAGGTTATTGTGCCCCGAAAGAGTGTGTGTCGGTATAATTGCTTCA
 GGGGTTTGGAACGCCATAACACGGCGCTTCTCACACACACCAGGCCATAACGAAGT

 181 ProSerProValValValGlyThrThrAspArgSerGlyAlaProThrTyrSerTrpGly
 CTCCCAGCCCCGTGGTGGTGGGAAACGACCGACAGGTCGGCGCCACCTACAGCTGGG
 GAGGGTCGGGGCACCAACCCTTGCTGGCTGTCCAGCCCAGCGCGGGTGGATGTCGACCC

 241 GluAsnAspThrAspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPhe
 GTGAAAATGATACGGACGTCTCGCCTAACAAATACCAGGCCACCGCTGGGCAATTGGT
 CACTTTACTATGCCCTGAGAACAGGAATTGTTATGGTCCGGTGGCACCCGTTAACCA

 301 GlyCysThrTrpMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
 TCGGTTGTACCTGGATGAACTCAACTGGATTCAACAAAGTGTGCGGAGGCCCTCCTGTG
 AGCCAACATGGACCTACTTGAGTTGACCTAACGTGGTTAACACGCCCTCGCGGAGGAACAC

 361 IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisPro
 TCATCGGAGGGGGCGGGCAACAAACACCCCTGCACTGCCCACTGATTGCTTCGCAAGCATC
 AGTAGCCTCCCCGCCCGTTGTGGACGTGACGGGGTGAACACGAAGCGTCTCGTAG

 421 AspAlaThrTyrSerArgCysGlySerGlyProTrpIleThrProArgCysLeuValAsp
 CGGACGCCACATACTCTGGTGGGCTCCGGTCCCTGGATCACACCCAGGTGCGCTGGT
 GCCTGCGGTGTATGAGAGGCCACGCCAGGGACCTAGTGTGGGTCCACGGGACCCAGC

 481 TyrProTyrArgLeuTrpHisTyrProCysThrIleAsnTyrThrIlePheLysIleArg
 ACTACCCGTATAAGGCTTGGCATTATCCTTGTACCATCAACTACACCATAATTAAAATCA
 TGATGGGCATATCCGAAACCGTAATAGGAACATGGTAGTTGATGTGGTATAAAATTAGT

 541 MetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGlu
 GGATGTACGGGGAGGGGTCGAACACAGGCTGGAAAGCTGCCTGCAACTGGACGCCGG
 CCTACATGCACCCCTCCCCAGCTTGTCCGACCTTCGACGGACGTTGACCTGCGCCCC

 601 ArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeuLeuLeuThrThr
 AACGTTGCGATCTGGAAGACAGGGACAGGTCCGAGCTCAGCCGTTACTGCTGACCA
 TTGCAACGCTAGACCTCTGTCCCTGTCAGGCTCGAGTCGGGCAATGACGACTGGT

 661 GlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIle
 CACAGTGGCAGGTCTCCGTGTTCTTACAACCCCTACAGCCTGTCACCGGGCTCAAGCATCG
 GTGTCACCGTCCAGGAGGGACAAGGAAGTGTGGATGGTCGGAACAGGTGGCCGGAGT

 721 HisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyValGlySerSerIleAla
 TCCACCTCCACCAAGAACATTGTGGACGTGCACTTGTACGGGGTGGGGTCAAGCATCG
 AGGTGGAGGTGGTCTTGTAAACACCTGCACGTCACTGACATGCCCAACCCAGTCG

 781 SerTrpAlaIleLysTrpGluTyrValValLeuPheLeuLeuAlaAspAlaArg
 CGCTCTGGGCCATTAAGTGGAGTACGTCGTTCTCCTGTTCTGCTGCAAGACGCC
 GCAGGACCCGGTAATTCACCCCTCATGCAGCAAGAGGACAAGGAAGACGAAACGT

 841 ValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsn
 GCGTCTGCTCTGCTTGAGTGTACTCATATCCCAAGCGGAGGCCGCTTGGAGA
 CGCAGACGAGGACGAACACCTACTACGATGAGTATAGGGTTCGCTCCGCCGAAACCTCT

 901 LeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuVal
 ACCTCGTAATACTTAATGCAGCATCCCTGGCCGGGACGCACGGTCTTGTATCCTTCCTCG
 TGAGCATTATGAATTACGTCGTAGGGACCGGGCCCTGCGTGCAGAACATAGGAAGGAGC

FIG. 47B

PhePheCysPheAlaTrpTyrLeuLysGlyLysTrpValProGlyAlaValTyrIhrPhe
 961 TGGTCTTCTGCTTGATGGTATTGAAGGGTAAGTGGGTGCCCGGAGCGGGTCTACACCT
 ACAAGAAGACGAAACGTAACATAAAACTTCCCATTACCCACGGGCCTGCCAGATGTGGA
 TyrGlyMetTrpProLeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeu
 1021 TCTACGGGATGTGGCCTCTCCTCCTGCTCCTGTTGGCGTGCCTGGGGTGCACGCG
 AGATGCCCTACACCAGGAGAGGAGGACGAGGACAACCGAACGGGTCGCCATGCGCG
 AspThrGluValAlaAlaSerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThr
 1081 TGGACACGGAGGTGGCCGCGTGTGTGGCGGTGTTCTCGTCGGGTTGATGGCGCTGA
 ACCTGTGCCCTCACCGGCGAGCACACCACCAACAAGAGCAGCCCACCTACCGCGACT
 LeuSerProTyrTyrLysArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeu
 1141 CTCTGTCACCATATTACAAGCGCTATATCAGCTGGTGTGCTTGTGGTGGCTTCAGTATTTTC
 GAGACAGTGGTATAATGTTCGCGATATAGTCGACCACGAACACCACCGAACGTCATAAAAG
 ThrArgValGluAlaGlnLeuHisValTrpIleProProLeuAsnValArgGlyGlyArg
 1201 TGACCAGAGTGGAAAGCGCAACTGCACGTGTGGATTCCCCCCTAACGTCCGAGGGGGC
 ACTGGTCTCACCTCGCGTTGACGTGCACACCTAACGGGGGGAGTTGCAGGCTCCCCCG
 AspAlaValIleLeuLeuMetCysAlaValHisProThrLeuValPheAspIleThrLys
 1261 GCGACGCCGTCATCTTACTCATGTGTGCTGACACCCGACTCTGGTATTTGACATCACCA
 CGCTGCGGCAGTAGAATGAGTACACACGACATGTGGGCTGAGACCATAACTGTAGTGGT
 LeuLeuLeuAlaValPheGlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValPro
 1321 ATTGCTGCTGGCGTCTCGGACCCCTTGGATTCTCAAGCCAGTTGCTTAAAGTAC
 TTAACGACGACCGGCAGAACGCTGGGAAACCTAACAGGTTTCGGTCAAACGAATTTCATG
 TyrPheValArgValGlnGlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGly
 1381 CCTACTTTGTGCGCGTCCAAGGCCCTCTCCGGTTCTGCGCGTTAGCGCGGAAGATGATCG
 GGATGAAACACGCGCAGGTTCCCGGAAGAGGCCAAGACGCGCAATCGGCCTTACTAGC
 GlyHisTyrValGlnMetValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyr
 1441 GAGGCCATTACGTGCAAATGGTCATCATTAAGTTAGGGGCGCTACTGGCACCTATGTTT
 CTCCGGTAATGCACTTACCAAGTAGTAATTCAATCCCCCGGAATGACCGTGGATAACAAA
 AsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAla
 1501 ATAACCATCTCACTCCCTTCGGGACTGGCGCACACGGCTTGCAGAGACTGGCGTGG
 TATTGGTAGAGTGGAGGAAGCCCTGACCCCGTGTGCGAACGCTCTAGACCGGGCACC
 ValGluProValValPheSerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThr
 1561 CTGTAGAGCCAGTCGTTCTCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATA
 GACATCTCGGTCAAGCAGAGGGTTACCTCTGGTGTGAGTAGTGCACCCCCGGTCTAT
 AlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArgArgGlyArgGluIle
 1621 CCGCCGCGTGGGTGACATCATCACGGCTTGCCTGGTCCCGCAGGGGCCGGAGA
 GGCAGCGCACGCCACTGTAGTTGCCAACGGACAAAGGCCGGTCCCGCCCTCT
 LeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThr
 1681 TACTGCTGGGCCAGCCGATGGAATGGCTCCAAGGGGTGGAGGTTGCTGGCGCCCATCA
 ATGACGAGCCCGGTCGGTACCTTACCAAGAGGTTCCCACCTCAACGACCGCGGGTAGT
 AlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThrSerLeuThrGlyArg
 1741 CGGCGTACGCCAGCAGACAAGGGGCCCTCTAGGGTGCATAATCACCAGCTAACTGGCC
 GCCGCATGCGGGTCGTGTGTTCCCGGAGGATCCCACGTATTAGTGGTCGGATTGACCGG
 AspLysAsnGlnValGluGlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeu
 1801 GGGACAAAAACCAAGTGGAGGGTGAGGTCCAGATTGTGTCAACTGCTGCCAACCTCC
 CCCTGTTGGTACCTCCACTCCAGGTCTAACACAGTTGACGACGGGTTGGAGG
 AlaThrCysIleAsnGlyValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIle
 1861 TGGCAACGTGCATCAATGGGTGTGCTGGACTGTCTACACGGGGCGGAACGAGGACCA
 ACCGTTGCACGTAGTTACCCCACACGACCTGACAGATGGTGGCCCGGCTTGCTCTGGT
 AlaSerProLysGlyProValIleGlnMetTyrThrAsnValAspGlnAspLeuValGly
 1921 TCGCGTCACCCAAAGGGTCTGTCATCCAGATGTATAACCAATGTAGACCAAGACCTTG
 AGCGCAGTGGTCCCAGGACAGTAGGTCTACATATGGTACATCTGGTTCTGGAACACC

FIG. 47C

TrpProAlaProGlnGlySerArgSerLeuThrProCysThrCysGlySerSerAspLeu
 1981 GCTGGCCCGCTCCGCAAGGTAGCCGCTCATTGACACCCCTGCACCTGCCTCGGCTCTCGGACC
 CGACCGGGCGAGGCGTTCCATCGCGAGTAACGTGGGACGTAAACGCCGAGGAGCCTGG

 TyrLeuValThrArgHisAlaAspValIleProValArgArgArgGlyAspSerArgGly
 2041 TTTACCTGGTCACGAGGCACGCCATGTCATTCCCGTGCACGGCTACAGTAAGGGCACGCGCCGCCCCACTATCGTCCC
 AAATGGACAGTGCTCCGTGCACGGCTACAGTAAGGGCACGCGCCGCCCCACTATCGTCCC

 SerLeuLeuSerProArgProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeu
 2101 GCAGCCTGCTGTCGCCCGGCCATTCTACTTGAAGGCTCCTCGGGGGTCCGCTGT
 CGTCGGACGACAGCGGGCCGGTAAAGGATGAACCTTCCGAGGAGCCCCCAGGCACA

 CysProAlaGlyHisAlaValGlyIlePheArgAlaAlaValCysThrArgGlyValAla
 2161 TGTGCCCGCGGGGCACGCCGTGGCATATTAGGGCCGCGGTGTCACCCGTGGAGTGG
 ACACGGGGCGCCCCGTGCACCGTATAAACCGGCCACACGTGGCACCTCAC

 LysAlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPhe
 2221 CTAAGGCGGTGGACTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGT
 GATTCCGCCACCTGAAATAGGGACACCTTGGATCTGTGGTACTCCAGGGGCCACA

 ThrAspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAla
 2281 TCACGGATAACTCCTCTCCACCAGTAGTGCACCCAGAGCTTCAGGTGGCTCACCTCATG
 AGTGCCTATTGAGGAGAGGTGGTCATCACGGGTCTCGAAGGTCCACCGAGTGGAGGTAC

 ProThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLys
 2341 CTCCCACAGGCAGCGGCACAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATA
 GAGGGGTGTCCGTCGCCGTTTGTGGTCCAGGGCCGACGTATACTGTCGAGTCCCAGAT

 ValLeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLys
 2401 AGGTGCTAGTACTCAACCCCTCTGGTGTGCAACACTGGGCTTGGTGTACATGTCCA
 TCCACGATCATGAGTTGGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGT

 AlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerPro
 2461 AGGCTCATGGGATCGATCTAACATCAGGACCGGGGTGAGAACAAATTACCAACTGGCAGCC
 TCCGAGTACCCCTAGCTAGGATTGTAGTCCTGGCCCCACTTGTAAATGGTACCGTCGG

 IleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyr
 2521 CCATCACGTACTCCACCTACGGCAAGTTCTTGCCGACGGCGGGGTGCTCGGGGGCGCTT
 GGTAGTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCGAA

 AspIleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGly
 2581 ATGACATAATAATTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTGGGCATCG
 TACTGTATTATTAAACACTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCGTAGC

 ThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThr
 2641 GCACTGTCCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTGTGCTGCCACCGCCA
 CGTGACAGGAACTGGTCTCGTACGCCCGCTCTGACGCCCGCTCTGACCAACACGAGCGGTGGCGGT

 ProProGlySerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThr
 2701 CCCCTCCGGGCTCGTCACTGTGCCCCATCCAAACATCGAGGAGGTTGCTCTGTCCACCA
 GGGGAGGCCCCGAGGCAGTGACACGGGGTAGGGTTGAGCTCCTCCAAACGAGACAGGTGGT

 GlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHis
 2761 CCGGAGAGATCCCTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGAC
 GGCCCTCTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCTCTG

 LeuIlePheCysHisSerLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeu
 2821 ATCTCATCTCTGTCAATTCAAAGAAGAAGTGCACGAACTCGCCGAAAGCTGGTCGCAT
 TAGAGTAGAACAGTAAGTTCTTCACTGCTGCTTGAGCGGGCTTCGACCAGCGTA

 GlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGly
 2881 TGGGCATCAATGCCGTGGCCTACTACCGCGGTCTTGACGTGTCCGTATCCGACCG
 ACCCGTAGTTACGGCACCGGATGATGGCGCCAGAACACTGCACAGGCACTAGGGCTGGTC

 AspValValValValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSer
 2941 GCGATGTTGTCGTGGCAACCGATGCCCTCATGACCGGCTATACCGGGACTTCGACT
 CGCTACAACAGCAGCACCGGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGA

FIG. 47D

Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe
 3001 CGGTGATAGACTGCAATACGTGTCACCCAGACAGTCGATTCAAGCCTTGACCCCTACCT
 GCCACTATCTGACGTTATGCACACAGTGGGCTGTCAGCTAAAGTCGGAACCTGGGATGGA

 Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly Arg
 3061 TCACCATTGAGACAATCACGCTCCCCCAGGATGCTGTCTCCCGACTCAACGTCGGGGCA
 AGTGGTAACCTGTAGTGCAGGGGGCTACGACAGAGGGCGTAGGTTGCAGCCCCGT

 Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly
 3121 GGAAGTGGCAGGGGGAAAGCCAGGCATCTACAGATTTGTCACCCGGGAGCGCCCTCCG
 CCTGACCGTCCCCCTCGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGC

 Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu Leu
 3181 GCATGTTGACTCGTCCGTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGC
 CGTACAAGCTGAGCAGGAGACACTCACGATACTGCCTCCGACACGAACCATCTCG

 Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val
 3241 TCACGCCCGCCGAGACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGGCTTCCG
 AGTGCGGCGGCTCTGATGTCAATCCGATGCTCGATGTACTTGTGGGCCCCGAAGGGC

 Cys Gln Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr Gln Leu Thr His Ile Asp Ala
 3301 TGTGCCAGGACCATCTTGAATTGGGAGGGCGTCTTACAGGCTCACTCATATAGATG
 ACACGGTCTGGTAGAACCTAAACCCCTCCGCAGAAATGTCCGGAGTGAGTATATCTAC

 His Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln
 3361 CCCACTTTCTATCCCAGACAAAGCAGAGTGGGAGAACCTCCTACCTGGTAGCGTACCG
 GGGTAAAGATAGGGTCTGTTCGTCAACCCCTTGGAGGAATGGACCATCGCATGG

 Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp Lys Cys
 3421 AAGCCACCGTGTGCGCTAGGGCTCAAGCCCTCCCCATCGTGGGACCAGATGTGGAGT
 TTCGGTGGCACACGCGATCCGAGTTCGGGAGGGGTAGCACCCCTGGTCTACACCTCA

 Leu Ile Arg Leu Lys Pro Thr Leu His Gln Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala
 3481 GTTTGATTCGCCCTCAAGCCCACCCCTCCATGGCCAACACCCCTGCTATACAGACTGGCG
 CAAACTAAGCGGAGTCGGGTGGAGGTACCCGGTTGTGGGACGATATGTCTGACCCGC

 Val Gln Asn Glu Ile Thr Leu Thr His Pro Val Thr Lys Tyr Ile Met Thr Cys Met Ser
 3541 CTGTTCAGAAATGAAATCACCTGACGCACCCAGTCACCAAATACATCATGACATGCATGT
 GACAAGTCTTACTTAGTGGACTGCGTGGTCAGTGGTTATGTAGTACTGTACGTACA

 Ala Asp Leu Glu Val Val Thr Ser Thr Trp Val Leu Val Gln Gly Val Leu Ala Ala Leu
 3601 CGGCCGACCTGGAGGTGTCACGAGCACCTGGGTGCTCGTTGGCGCGTCTGGCTGCTT
 GCGGCTGGACCTCCAGCAGTGTGCGACGACAGCAACCGCCAGGAGCAACCGCCGAGGACGAA

 Ala Ala Tyr Cys Leu Ser Thr Gln Cys Val Val Ile Val Gln Arg Val Val Leu Ser Gly
 3661 TGGCCGCGTATTGCCGTCAACAGGCTGCGTGGTCAGTGGGAGGGTCGTTGGCTCTGGCTGCTTCCG
 ACCGGCGCATACGGACAGTTGTCCGACGCAACAGTACCCCGTCCAGCAGCAGAACAGGC

 Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu Phe Asp Glu Met Glu Glu
 3721 GGAAGCCGGAATCATACCTGACAGGGAAAGTCCTACCGAGAGTTGCGATGAGATGGAAAG
 CCTTCGGCGTTAGTATGGACTGTCCTCAGGAGATGGCTCTCAAGCTACTCTACCTTC

 Cys Ser Gln His Leu Pro Tyr Ile Glu Gln Gly Met Met Leu Ala Glu Gln Phe Lys Gln
 3781 AGTGCCTCAGCACTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGC
 TCACGAGAGTCGTGAATGGCATGTCAGCTCGTCCCTACTACGAGCGCTCGTCAAGTCG

 Lys Ala Leu Gly Leu Leu Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala Pro Ala Val
 3841 AGAAGGCCCTCGGCCTCCTGCAAGCCGCTCCCGTCAGGCAGAGGTTATCGCCCCTGCTG
 TCTTCGGGAGCCGGAGGACGTCGGCGCAGGGCAGTCCGTCTCAATAGCGGGGACGAC

 Gln Thr Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys His Met Trp Asn Phe Ile Ser
 3901 TCCAGACCAACTGGCAAAAACCGAGACCTTCTGGGCGAAGCATAATGTGGAACTTCATCA
 AGGTCTGGTTGACCGTTTGAGCTCTGGAAAGACCCGCTTCGTATACACCTGAAGTAGT

 Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn Pro Ala Ile Ala Ser Leu
 3961 GTGGGATAACAATCTGGCGGGCTTGTCAACGCTGCGTGGTAACCCCGCCATTGCTTCAT
 CACCCCTATGTTATGAACCGCCCGAACAGTTGCAGGGACCATGGGGCGGTAAACGAAGTA

FIG. 47E

MetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsn
4021 TGATGGCTTTACAGCTGCTGTCACCAGCCCCACTAACCACTAGCCAAACCTCCTCTTCA
ACTACCGAAAATGTCGACGACAGTGGTCGGGTGATTGGTATCGGTTGGGAGGAGAAGT

IleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheVal
4081 ACATATTGGGGGGGGTGGGTGGCTGCCAGCTGCCGCCCCGGTGCCTACTGCCTTTG
TGTATAACCCCCCCCACCCACCAGGGTCGAGCGCGGGGGCACGGCGATGACGGAAAC

GlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAsp
4141 TGGGCGCTGGCTTAGCTGGCGCCATCGCAGTGTGGACTGGGGAGGTCTCATAG
ACCCCGCAGCGAACATCGACCGCGGGTAGCCGTACAACCTGACCCCTCCAGGAGTATC

IleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSer
4201 ACATCCTTGCAAGGGTATGGCGGGCGTGGCGGGAGCTCTGTGGCATTCAAGATCATGA
TGTAGGAACGTCCTACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACT

GlyGluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGly
4261 GCGGTGAGGGTCCCTCCACGGAGGACCTGGTCAATCTACTGCCGCCATCCTCTCGCCCG
CGCCACTCCAGGGGAGGTGCCTCTGGACCACTAGATGACGGCGTAGGAGAGCGGGC

AlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGlu
4321 GAGCCCTCGTAGTCGGCGTGGCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCG
CTCGGGAGCATCAGCGCACAGACACGTCGTTATGACGCGGCCGTGCAACCGGGCCCG

GlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
4381 AGGGGGCAGTGCAGTGGATGAACCGGGCTGATAGCCTCGCCTCCGGGGGAACCATGTTT
TCCCCCGTCACGTACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAA

ProThrHisTyrValProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSer
4441 CCCCCACGCACTACGTGCCGGAGAGCGATGCAGCTGCCCGCCTACTGCCATACTCAGCA
GGGGGTGCGTGTGACCGCCCTCGTACGTCGACGGCGCAGTGACGGTATGAGTCG

LeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThr
4501 GCCTCACTGTAACCCAGCTCTGAGGCAGACTGCACCACTGGATAAGCTGGAGTGTACCA
CGGAGTGACATTGGTCGAGGACTCCGCTGACGTGGCACCTATTGAGCCTCACATGGT

ProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAsp
4561 CTCCATGCTCCGGTTCTGGCTAAGGGACATCTGGGACTGGATAATGCGAGGTGTTGAGCG
GAGGTACGAGGCCAAGGACCGATTCCCTGTAGACCCCTGACCTATACGCTCCACAATCGC

PheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGlyIleProPheValSer
4621 ACTTTAACGACCTGGCTAAAGCTAACGCTCATGCCACAGCTGCCCTGGATCCCCTTGTT
TGAAATTCTGGACCGATTTCGATTGAGTACGGTGTGACGGACCCTAGGGGAAACACA

CysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMetHisThrArgCysHis
4681 CCTGCCAGCGCGGGTATAAGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGC
GGACGGTCGCGCCCATATCCCCCAGACCGCTCACCTGCCGTAGTACGTGTGAGCGACGG

CysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArg
4741 ACTGTGGAGCTGAGATCACTGGACATGTCAAAACGGGACGATGAGGATCGTCGGTCCTA
TGACACCTCGACTCTAGTGTACAGTTTGCCCTGCTACTCCTAGCAGCCAGGAT

ThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCys
4801 GGACCTGCAGGAACATGTGGAGTGGGACCTCCCATTAATGCCTACACCACGGGCCCT
CCTGGACGTCCTGTACACCTCACCCCTGGAAAGGGGTAATTACGGATGTGGTGCCCGGGGA

ThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyr
4861 GTACCCCCCTCCTGCGCCGAACATCACGTTCGCGCTATGGAGGGTGTGCAGAGGAAT
CATGGGGGGAAAGGACGCGGTTGATGTGCAAGCGCGATAACCTCCCACAGACGTCTCCTTA

ValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeu
4921 ATGTGGAGATAAGGCAGGTGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATC
TACACCTCTATTCCGTCACCCCTGAAGGGTATGCAACTGCCATACTGATGACTGTTAG

LysCysProCysGlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeu
4981 TCAAATGCCGTGCGAGGTCCATGCCCGAATTTCACAGAATTGGACGGGTGCGCC
AGTTACGGGCACGGTCCAGGGTAGCGGGCTAAAAAGTGTCTAACCTGCCACCGCGG

FIG. 47F

HisArgPheAlaProProCysLysProLeuLeuArgGluGluValSerPheArgValGly
 5041 TACATAGTTTGCGCCCTGCAAGCCCTGCTGGGAGGGAGGTATCATTAGAGTAG
 ATGTATCCAAACGCGGGGGACGTTGGGAACGACGCCCTCCATAGTAAGTCTCATC

 LeuHisGluTyrProValGlySerGlnLeuProCysGluProGluProAspValAlaVal
 5101 GACTCCACGAATAACCGGTAGGGTCGCAATTACCTTGAGCCCAGCCGGACGTGGCCG
 CTGAGGTGCTTATGGCCATCCCAGCTTAATGGAACGCTCGGGCTGGCCTGCACCGGC

 LeuThrSerMetLeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeu
 5161 TGTTGACGTCCATGCTCACTGATCCCTCCATATAACAGCAGAGGGCGCCGGCGAAGGT
 ACAACTGCAGGTACGAGTGACTAGGGAGGGTATATTGTCGCTCCGCCGGCCGCTTCCA

 AlaArgGlySerProProSerValAlaSerSerAlaSerGlnLeuSerAlaProSer
 5221 TGGCGAGGGGATCACCCCCCTGTGGCCAGCTCTGGCTAGCCAGCTATCGCTCCAT
 ACCGCTCCCTAGTGGGGGGAGACACGGTCGAGGAGCCGATCGTCGAGGTA

 LeuLysAlaThrCysThrAlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsn
 5281 CTCTCAAGGCAACTTGCACCGCTAACCATGACTCCCTGATGCTGAGCTCATAGAGGCCA
 GAGAGTTCCGTTAACGTTGGCGATTGGTACTGAGGGACTACGACTCGAGTATCTCCGGT

 LeuLeuTrpArgGlnGluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysVal
 5341 ACTCTCTATGGAGGCAGGAGATGGGCGGGAACATCACCAGGGTTGAGTCAGAAAACAAAG
 TGAGGATAACCTCCGCTCTACCCGCCGTTGAGTGGTCCCAACTCAGTCTTTGTTTC

 ValIleLeuAspSerPheAspProLeuValAlaGluGluAspGluArgGluIleSerVal
 5401 TGGTGATTCTGGACTCCTCGATCCGCTTGTGGCGAGGAGCAGCAGGGAGATCTCG
 ACCACTAACGACCTGAGGAAGCTAGGCGAACACCGCCTCCTGCTGCCCTCTAGAGGC

 ProAlaGluIleLeuArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArg
 5461 TACCCGCAGAAATCCTCGGAAAGTCTCGGAGATTGCCAGGCCCTGCCGTTGGCGC
 ATGGCGCTTTAGGACGCCCTAGAGCCTCTAACGGGGTCCGGGACGGCAAACCCGCG

 ProAspTyrAsnProProLeuValGluThrTrpLysLysProAspTyrGluProProVal
 5521 GGCGGACTATAACCCCCCGCTAGGGAGACGTGGAAAAAGCCGACTACGAACCACCTG
 CCGGCCTGATATTGGGGGGCGATCACCTCTGACCTTTTGGGCTGATGCTTGGTGGAC

 ValHisGlyCysProLeuProProProLysSerProProValProProProArgLysLys
 5581 TGGTCCATGGCTGCCGCTTCCACCTCCAAAGTCCCCTCTGTGCCTCCGCCCTGGAAAGA
 ACCAGGTACCGACAGGGGAAGGTGGAGGTTCAAGGGAGGACACGGAGGCGGAGCCTTCT

 ArgThrValValLeuThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArg
 5641 AGCGGACGGTGGCTCTACTGAATCAACCTATCTACTGCCTGGCCGAGCTGCCACCA
 TCGCCTGCCACCAGGAGTGACTTAGTGGGATAGATGACGGAACCGGCTCGAGCGGTGGT

 SerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGlu
 5701 GAAGCTTGGCAGCTCCTCAACTTCCGGCATTACGGCGACAATAACGACAACATCCTCTG
 CTTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCGCTGTTATGCTGTTAGGAGAC

 ProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSerMetProPro
 5761 AGCCCCGCCCTCTGGCTGCCCGACTCCGACGCTGAGTCCTATTCCCTCATGCCCG
 TCGGGCGGGGAAGACCGACGGGGGCTGAGGCTGCACTCAGGATAAGGAGGTACGGGG

 LeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSer
 5821 CCCTGGAGGGGGAGCCTGGGATCCGGATTTAGCGACGGGTCTGGTCAACGGTCAGTA
 GGGACCTCCCCCTCGGACCCCTAGGCCCTAGAACATCGCTGCCAGTACCGAGTTGCCAGTC

 GluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeu
 5881 GTGAGGCCAACGCGGAGGGATGTCGTGCTGCTCAATGCTTACTCTGGACAGGCGCAC
 CACTCCGGTTGCGCCTCTACAGCACACGAGTTACAGAACATGAGAACCTGTCCCGTG

 ValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeu
 5941 TCGTCACCCCGTGCAGCGCAGGAAAGAACAGAAACTGCCATCAATGCACTAAGCAACTCGT
 AGCAGTGGGGCACGCGCGCTTCTTGCTTGTACGGTAGTTACGTGATTGAG

 LeuArgHisHisAsnLeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLys
 6001 TGCTACGTACCCACAATTGGGTATTCCACACCTCACGCAGTGCTTGCAAAAGGCAGA
 ACGATGCAAGTGGTGTAAACCACATAAGGTGGAGTGCACGAAACGGTTCCGTCT

FIG. 47G

LysValThrPheAspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGlu
6061 AGAAAGTCACATTGACAGACTGCAAGTTCTGGACAGCCATTACCAAGGACGTACTCAAGG
TCTTTCACTGTCTGACGTTCAAGACCTGTCGGTAATGGTCCTGCATGAGTTCC
ValLysAlaAlaAlaSerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSer
6121 AGGTTAAAGCAGCGCGTCAAAGTGAAGGCTAACTGCTATCCGTAGAGGAAGCTTGCA
TCCAATTCGTCGCCAGTTCACTTCCGATTGAACGATAGGCATCTCCTTCGAACGT
LeuThrProProHisSerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCys
6181 GCCTGACGCCCCCCACACTCAGCAAATCAAAGTTGGTTATGGGGCAAAAGACGTCCGTT
CGGACTGCGGGGTGTGAGTCGGTTAGGTTCAAACCAATACCCGTTCTGCAGGCAA
HisAlaArgLysAlaValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsn
6241 GCCATGCCAGAAAGGCCGTAAACCACATCAAACCTCCGTGTGGAAAGACCTTCTGGAAGACA
CGGTACGGTCTTCCGGCATTGGGTGTAGTTGAGGCACACCTTCTGGAAGACCTCTGT
ValThrProIleAspThrThrIleMetAlaLysAsnGluValPheCysValGlnProGlu
6301 ATGTAACACCAATAGCAACTACCATCATGGCTAAGAACGAGGTTTCTGCGTTAGCCTG
TACATTGTGGTTATCTGTGATGGTAGTACCGATTCTGCTCCAAAAGACGCAAGTCGGAC
LysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeuGlyValArgValCys
6361 AGAAGGGGGGTCGAAGCCAGCTCGTCTCATCGTTCCCGATCTGGCGTGCACGCGTGT
TCTTCCCCCAGCATTGGTCGAGCAGAGTAGCACAAAGGGCTAGACCCGACACGCGCACA
GluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAlaValMetGlySerSer
6421 GCGAAAAGATGGCTTGTACGACGTGGTTACAAAGCTCCCTGGCCGTGATGGGAAGCT
CGCTTTCTACCGAAACATGCTGCACCAATGTTCGAGGGAAACCGGCACTACCCCTCGA
TyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSer
6481 CCTACGGATTCCAATACTCACCAAGGACAGCGGGTTGAATTCTCGTGCAGCGTGGAAAGT
GGATGCCTAAGGTTATGAGTGGCTCTGTCGCCAACTTAAGGAGCACGTTGCACCTTC
LysLysThrProMetGlyPheSerTyrAspThrArgCysPheAspSerThrValThrGlu
6541 CCAAGAAAACCCAATGGGGTTCTGTATGATAACCCGCTGCTTGAATCAGTCACGTC
GGTTCTTTGGGGTTACCCAAAGAGCATACTATGGCGACGAAACTGAGGTGTCAGTGC
SerAspIleArgThrGluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArg
6601 AGAGCGACATCCGTACGGAGGAGGCAATCTACCAATGTTGTACCTCGACCCCCAAGCCC
TCTCGCTGTAGGCATGCCTCCGTTAGATGGTTACAACACTGGAGCTGGGGGTTGG
ValAlaIleLysSerLeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArg
6661 GCGTGGCCATCAAGTCCCTACCGAGAGGCTTATGTTGGGGCCCTTACCAATTCAA
CGCACCGGTAGTTCAAGGGAGTGGCTCTCGAAATAACACCCCGGGAGAATGGTTAAGT
GlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGly
6721 GGGGGGAGAACTGCGGCTATCGCAGGTGCGCGCGAGCAGGGCTACTGACAACACTAGCTGTG
CCCCCTCTGACGCCATAGCGTCCACGGCGCGCTGCCGCATGACTGTTGATCGACAC
AsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAsp
6781 GTAACACCCCTACTTGCTACATCAAGGCCGGGAGGCTGTGAGCCGAGGGCTCCAGG
CATTGTGGGAGTGAACGATGTAGTCCGGGCCGTGGACAGCTCGCGTCCGAGGTCC
CysThrMetLeuValCysGlyAspAspLeuValValIleCysGluSerAlaGlyValGln
6841 ACTGCACCATGCTCGTGTGGCGACGACTTGTGAAAGCAGGGCTACTGGTCC
TGACGTGGTACGAGCACACACCCTGCTGTAATCAGCAATAGACACTTCCGCCCCCAGG
GluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProPro
6901 AGGAGGACGCCGAGGCTGAGAGGCTTACGGAGGCTATGACCAAGGTA
TCCTCCTGCGCCGCTGGACTCTCGGAAGTGCCTCCGATACTGGTCCATGAGGCGGGGG
GlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnVal
6961 CTGGGGACCCCCCACACAGAAATACGACTTGGAGCTCATACATCATGCTCCTCCAACG
GACCCCTGGGGGTGTTGGTCTTATGCTAACCTCGAGTATTGAGTACGAGGAGGTTGC
SerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThr
7021 TGTCAAGTCGCCACGACGGCGCTGGAAAGAGGGCTACTACCTCACCGTGACCCCTACAA
ACAGTCAGCGGGTGCTGCCGCACCTTCTCCAGATGATGGAGTGGCAGTGGGATGTT

FIG. 47H

ProLeuAlaArgAlaAlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGly
7081 CCCCCCTCGCGAGAGCTGCGTGGGAGACAGCAAGACACACTCCAGTCATTCTGGCTAG
GGGGGGAGCGCTCTGACGCACCCCTGTGCGTTCTGTGAGGTCAGTTAAGGACCGATC

AsnIleIleMetPheAlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePhe
7141 GCAACATAATCATGTTGCCCCCACACTGTGGGCGAGGATGATACTGATGACCCATTCT
CGTTGTATTAGTACAACGGGGGTGTGACACCCGCTCTACTATGACTACTGGGTAAAGA

SerValLeuIleAlaArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAla
7201 TTAGCGTCCTTATAGCCAGGGACCAGCTTGAAACAGGCCCTCGATTGCGAGATCTACGGGG
AATCGCAGGAATATCGGTCCCTGGTCGAACCTGTCCGGAGCTAACGCTCTAGATGCC

CysTyrSerIleGluProLeuAspLeuProProIleIleGlnArgLeu
7261 CCTGCTACTCCATAGAACCACTTGATCTACCTCCAATCATTCAAAGACTC
GGACGATGAGGTATCTGGTGAAGTAGATGGAGGTTAGTAAGTTCTGAG

FIG. 48

ProSerProValValGlyThrAspArgSerGlyAlaProThrTyrsSerTrpGly
1 CTCAGCCCCCTGGTGGAAACGACCACAGGTCGGCCCTACAGCTGGG
GAGGGTCTGGGCCACCACCCCTTGCTGGCTGTCCAGCCCCGGATGGATGTCGACCC
GluAsnAspThrAspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPhe
61 GTGAAAATGATAACGGACGTCTTCGCTTAACAATTACCAAGGCCACCGCTGGCAATTGGT
CACTTTACTATGGCTGCAGAACAGGAATTGGTTATGGTCCGGTGGCGACCCGGTTAACCA
GlyCysThrTrpMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
121 TCGGTGTGACCTGGATGAACTCAACTGGATTCAACCAAAGTGTGGGAGGGCGCTCCTGTG
AGCCAACATGGACCTACTTGAGTTGACTTAAGTGGTTCACACGGCTCAGGCCCTCGCGGAGGAACAC
IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLyShiSPro
181 TCATGGAGGGGGGGCAACACCCCTGCACACTGCCCAACTGATTGCTTCCGCAAGCATC
AGTAGCCTCCCCGGGGCTGGGACGTTGACGGGGTGAACTAACGAAAGGGCTCGTAG
AspAlaThrTyrSerArgCysGlySerGlyProTrpLeuThrProArgCysLeuValAsp
241 CGGACGCCACATACTCTGGTGGGGCTCCGGTCCCTGGCTCACACCCAGGTGGCTGGTGC
GCCTGGGTGTATGAGGCCACGGCCAGGGACGGGAGGTGGGTCACGGGACCA

TyrProTyrrArgLeuTrpHiStyrrProCysthrileAsnTyrrThrilePhelysileArg
301 ACTACCCGATAGGCTTGGCATATCCTGTACCATCAACTACACCATATTAAATCA
TGATGGCATAATCCGAAACCGTAATAAGAACATGGTAGTGGATGGGTATAAATTAGT

MetTyryvalGlyGlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGlu
361 GGATGGTACGTGGGGGGTGGAGGACACGGCTGGAAAGCTGGCTGCACACTGGACGGGG
CCTACATGGCACCCCTCCCAGCTCGTGTCCGACGGACGTTGACCTGGCCCCGGC
-----Overlap with 12f-----
ArgCysAspLeuGluAspArgSerGluLeuSerProLeuLeuThrThrThr
421 AACGTTGGCAGCTGGAAAGACAGGGACAGGTCCGAGCTCAGCCCCGTTACTGGCTGACCA
TTGCAACGCTAGACCTTCTGTCCCTGTCCAGGGCAATGACGACTGGTGT

GlnTrpGlnValLeuProAlaLeuSerThrGlyLeu
481 CACAGTGGCAGGTCCTCCGGTGTCTCACAAACCCCTGCCAGGCTCACGGGGCTCA
GTGTCAACCGTCAGGGCACAAAGGAAGTGTGGGACGGTGGGAACAGGGAGT

FIG. 49

LeuPheTerHisIleSleAsnSerSerGlyCysProGluArgLeuAlaSerCysArg
1 GCTTTCTATCACCAAGTCAACTCTAGGCTGTCCTGAGAGGCTAGCCAGCTGCCG
CGAAAAGATACTGTGTTCAAGTGAGAAGTCCGACAGGA
ProLeuThrAspPheAspGlnGlyTrpGlyProIleSerTerYralaAsnGlySerGlyPro
61 ACCCCTAACCGATTGGTACCCAGGGCTGGGCCTATCAGTTATGCCAACCGAAAGCGGCC
TGGGAATGGCTAAACTGGTCCCAGCCCCGGGATAGTCATAACGGTTGCCCTTGGCCGGG
AspGlnArgProTyrcystrPhiIstyrProProLysProCysGlyIleValProAlaLys
121 CGACCAGGGCCCTACTGCTGGCAACTACCCCCAAACCTGGTGGTATTGTGCCCGCGAA
GCTGGTGGGGGATGACGACCGTGATGGGGTTGGAAACGCCATAACGGGGCTT
---Overlap with 13i---
SerValCysGlyProValItyrCysPheThrProSerProValValVal
181 GAGTGTGTGTGGTCCGGTATATTGCTTCACTCCCCAGCCCCGGTGGTGGTGG
CTCACACACACCAGGCCATATAACGAAGTGAGGGTGGGGCACCAACCC

FIG. 50

LeuValMetAlaGlnLeuLeuArgIleProGlnAlaIleLeuAspMetIleAlaGlyAla
1 TTGGTAATGGCTCAGCTGGATCCACAAGCCATCTGGACATGATCGCTGGTGCT
ACCATAACCGAGTCGACGAGGCCCTAGGGTGTAGAACCTGACTAGGCACACGA
HisTrpGlyValLeuAlaGlyIleAlaIleAlaIleAlaIleAlaIleAlaIleAla
61 CACTGGGGAGTCCTGGGGCATAGCGTATTTCATGGGTGGAAACTGGCGAAGGTC
GTGACCCCTCAGGACCGCCGTATGCCATAAAGAGGTACCCCTTGACCCGCTCCAG
LeuValValLeuLeuPheAlaGlyValAspAlaGluThrHisValThrGlyGlySer
121 CTGGTAGTGCTGCTGCTATTGCCGGCTCGACCCGGAAACCCACGTCACCGGGGAAAGT
GACCATCACGACGACCGATAAACGGCCGACCTGGCCCTTTCGGTCCAGTGGCCCTTCA
AlaGlyHisThrValSerGlyPheValSerLeuLeuAlaProGlyAlaLysGlnAsnVal
181 GCCGGCCACACTGTGTCGGATTGGCTAGCAGACGACTAACATGGAGGAGGGTGGCTT
CGGCCGGTGTGACACAGACCTAACATGGAGGAGGGTGGCTTGGCTTGGCAG
GlnLeuIleAsnThrAsnGlySerTrpHisLeuAsnSerThrAlaLeuAsnCysAsnAsp
241 CAGCTGATCAAACACCAACGGCAGTTGGCACCTCAAATAGCACGGCCCTGAAC
GTGCACTAGTTGGTTGGCTAACCGGTCAACCGTGGAGTTATGGTACGGTACTA
SerLeuAsnThrGlyTrpLeuAlaGlyLeuPheTyrHisLysPheAsnSerSerGly
301 AGCCTAACACACGGCTGGCAGGGCTTTCTATACCAAGTCAACTCTTCAAGTTGAGTCCG
TCGGAGTTGGCTGGCTAACCGGTCAACCGGACCAACCGTCCC
-----Overlap with K9-1-----
CysProGluArgLeuAlaSerCysArgPro
361 TGTCCCTGAGGGCTAGCCAGCTGCCGACCC
ACAGGACTCTCCGATGGTCGACGGCTGGG
-----Overlap with 26j-----

FIG. 51

GlnGlyCysAsnCysSerIleTyrProGlyHisIleThrGlyHisArgMetAlaTrpAsp
1CGCAAGGGTTGCAAATTGGCTATATCCGGCCATATAACGGGTACCGCATGGCATGGG
GCCTTCCAAACGTTAACGAGATAAGGCGGTATATTGCCAGTGGCTACCGTACCC

MetMetMetAsnTrpSerProThrThrAlaLeuValMetAlaGlnLeuLeuArgIlePro
61 ATATGATGATGAACACTGGTCCCCCTACGACGGCGTTGGTAATTGGCTACGCTGCTCCGGATCC
TATACTACTTGTACCGGGATGCTGCCGCAACCATTACCGAGTCGAGGCTAGG

GlnAlaIleLeuAspMetIleAlaIleAlaHisTrpGlyValLeuAlaGlyIleAlaTyr
121 CACAAGGCCATCTTGACATGTGATCGCTGGCTCATCTGGAGTCCTGGGGCATAGCGT
GTGTTGGTAGAACCTGTACTAGCGACCGACTAGCGGACCACTGACCCCTCAGGACCGGCTATCGCA

-----Overlap with CA59a-----

PheSerMetValGlyAsnTrpAlaIleValLeuValValLeuLeuPheAlaGlyVal
181 ATTCTCTCCATGGTGGGAACCTGGGAAGGTCCCTGGTAGTGCTGCTGCTATTGCGGGCG
TAAAGAGGTACCAACCCCTGACCCGCTTCCAGGACCATCACGACCGATAAACGGCCGC

AspAlaGlutIleThrHisValThrGly
241 TCGACGGGAAACCCACGTCACCGGGG
AGCTGGCGCTTGGGTGCAAGTGGCCC

FIG. 52

Cysteine 1 GTTGGTGGCATGACCCCTACGGTGGCACCAGGGATGGCAAACCTCCCGGACGCA
Ala 2 CAAACCCACCGCTACTGGGATGCCACCGGTCCCTACCGTTGAGGGGCCTGGCT

LewargarginisileAspLeuValGlySerAlaThrLeuCysSerAlaLeuTryVal
 61 GCTTCGACGTACATCGATCTGCTTGTGGAGGCCACCCCTCTGGCCCTCTACG
 CGAAGCTGCAGTAGCTAGACGAAACAGCCCCCTCGGGAGACAAAGCCCCGAGATGCA

GlyAspLeuCysGlySerValPheLeuValGlyGlnLeuPheSerProArgArg
 121 GGGGACCTATGGGGTCTGTCTTCTTCTGGCCAAGTGTCACTTCTCCAGGGC
 CCCCCTGGATAAGCCAGACAGAAAACAGCCCCAGACAGAAAGTGAAAGAGGGTCCGC

HistrpThrGlnGlyCysAsnCysSerIleTyrProGlyHisIleThrGlyHisArg
 181 CCACTGGACGACGCCAACGGTCAATTGCAATTGCTCTATCTATCCGGCCATAAACGGGTCAACCG
 GGTGACTGTGCGTTAACGTTAACGAGATAGATAGGGCCGGTATATTGCCCAAGTGGC

Overlap with CA84a
MetAlaTrpAspMetMetAsnTrpSerProThrAlaLeuValValAlaGlnLeu
CATGGCATGGATATGATGAACTGGTCCCCTACGACGGCGTTGGTAGTGCTCAGCT
GTACCGTTACCCCTATACTTACTTACTTACTTACTTACTTACTTACTTACTTACTT

301 Leu Arg Ile Pro Glu Ala
GCT CCG GAT CCC CAA AGCC
CGAGG CCT ATGGGT GTT TCGG

FIG. 53

SerThrGlyLeuTyRHisValThrasnAspCysProAsnSerSerIleValTyrgluAla
1 CCTCACGGGCTTACCACTACGGTCACCAATGATTGCCCTAACCTCGAGTATTGTGTTACGGGC
GAGGTGCCCCGAAATGGTGCAGTGGTTACTAACGGGATTTGAGCTATAACACATGCTCCG

AlaAspAlaIleLeuHisThrProGlyCysValProCysValArgGluGlyAsnAlaSer
61 GGGCGATGCCATCTGCACACTCCGGGTGGCTCCCTTGCGTACCGGCAACGCCCTC
CGGCTACGGTAGGTGACGTGTGAGGGCCCACGGCAGGGAAACGCAAGCAGGACTCCCGTGGGAG

ArgCystRPValAlaMetThrProThrValAlaThrArgAspGlyLysLeuProAlaThr
121 GAGGTGGTGGTGGCGATGCCCTACGGTGCCACCAGGGATGGCAAACCTCCGGCGAC
CTCCACAAACCCACCGCTACTGGGATGCCACCGGTTACCGGTTACCGCTG

Overlap with CA156e-----
GlnLeuArgArgHisIleAspLeuValGlySerAlaThrLeuCysSerAlaLeuTyR
181 GCAGGCTTCGACGTACATCGATCTGCTTGCTGGAGCGCTACCCCTGTTCGGCCCTCTA
CGTCGAAGCTGGCAGTGTAGCTAGACGAACAGCCCTCGCGATGGAGACAAGCCGGAGAT

ValGlyAspLeuCysGlySerValPheLeu
241 CGTGGGGACTTGTGGGGTCTGTCTTCTTG
GCACCCCTGAAACACGCCAGACAGAAAGAAC

FIG. 54A

1 ArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCysGlyPheAlaAspLeuMet
1 AGGTGCGCAATTGGGTAAGGTATCGATACCTACGTGCGGCTTCGCCGACCTCATG
TCCAGCGCGTTAACCCATTCACTAGCTATGGGAATGCACGCCAAGCGGCTGGAGTAC

61 GlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAlaArgAlaLeuAlaHisGly
61 GGGTACATACCGCTCGTCGGCGCCCTCTGGAGGCCTGCCAGGGCCCTGGCGCATGGC
CCCATGTATGGCGAGCAGCCGCCGGAGAACCTCCGCACGGTCCCAGGACCGCGTACCG

121 ValArgValLeuGluAspGlyValAsnTyrAlaThrGlyAsnLeuProGlyCysSerPhe
121 GTCCGGGTTCTGGAAGACGGCGTGAACATATGCAACAGGGAACCTTCCTGGTTGCTTT
CAGGCCAACCTTCTGCCGCACCTGATACGTTGCCCTTGGAAAGGACCAACGAGAAAG

181 SerIlePheLeuLeuAlaLeuLeuSerCysLeuThrValProAlaSerAlaTyrGlnVal
181 TCTATCTTCTTCTGGCCCTGCTCTTGCTTGACTGTGCCGCTTCGGCTACCAAGTG
AGATAGAAGGAAGACGGGACGAGAGAACGAACTGACACGGGCGAAGCCGGATGGTTAC

241 ArgAsnSerThrGlyLeuTyrHisValThrAsnAspCysProAsnSerSerIleValTyr
241 CGCAAACCTCACGGGGCTTACACACGTACCAATGATTGCCCTAACTCGAGTATTGTGTAC
GCGTTGAGGTGCCCGAAATGGTGCAGTGGTTACTAACGGGATTGAGCTCATAACACATG

301 GluAlaAlaAspAlaIleLeuHisThrProGlyCysValProCysValArgGluGlyAsn
301 GAGGCAGGCCGATGCCATCCTGCACACTCCGGGGTGCCTTGCGTTGAGGGCAAC
CTCCGCCGGCTACGGTAGGACGTGTGAGGCCACGCAGGGAACGCAAGCACTCCGTTG

361 AlaSerArgCysTrpValAlaMetThrProThrValAlaThrArgAspGlyLysLeuPro
361 GCCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAGGGATGGCAAACCTCCCC
CGGAGCTCCACAACCCACCGCTACTGGGGATGCCACCGTGGCCCTACCGTTGAGGGG

421 AlaThrGlnLeuArgArgHisIleAspLeuLeuValGlySerAlaThrLeuCysSerAla
421 GCGACGCAGCTTCGACGTCACATCGATCTGCTTGTGGAGCGCCACCCCTGTTGGCC
CGCTGCGTCGAAGCTGCACTGAGCTAGACGAAACAGCCCTCGCGGTGGAGACAAGCCGG

481 LeuTyrValGlyAspLeuCysGlySerValPheLeuValGlyGlnLeuPheThrPheSer
481 CTCTACGTGGGGGACCTATGCGGGTCTGTCTTCTGTGCGGCCACTGTTCACCTCT
GAGATGCACCCCTGGATACGCCAGACAGAAAGAACAGCCGGTGGAGACAAGTGGAAAGAGA

541 ProArgArgHisTrpThrThrGlnGlyCysAsnCysSerIleTyrProGlyHisIleThr
541 CCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCCAGGCCATATAACG
GGGTCCCGCGGTGACCTGCTCCGTTCAACGTTAACGAGATAGATAGGGCCGGTATATTGC

601 GlyHisArgMetAlaTrpAspMetMetAsnTrpSerProThrThrAlaLeuValMet
601 GGTCAACCGCATGGCATGGGATATGATGATGAACTGGTCCCCTACGACGGCGTTGGTAATG
CCAGTGGCGTACCGTACCCCTATACTACTACTTGACCAGGGGATGCTGCCGCAACCATTAC

FIG. 54B

AlaGlnLeuLeuArgIleProGlnAlaIleLeuAspMetIleAlaGlyAlaHisTrpGly
661 GCTCAGCTGCTCCGGATCCCACAAGCCATCTTGGACATGATCGCTGGTGCCTCACTGGGA
CGAGTCGACGAGGCCCTAGGGTGTTCGGTAGAACCTGACTAGCGACCACGAGTGACCCCT

ValLeuAlaGlyIleAlaTyrPheSerMetValGlyAsnTrpAlaLysValLeuValVal
721 GTCCTGGCAGGGCATAGCGTATTCTCATGGTGGGAACTGGCGAAGGTCCTGGTAGTG
CAGGACCGCCCGTATCGATAAAGAGGTACCAACCCCTGACCGCTTCAGGACCATCAC

LeuLeuLeuPheAlaGlyValAspAlaGluThrHisValThrGlyGlySerAlaGlyHis
781 CTGCTGCTATTGCCGGCGTCACGCCGAAACCCACGTACCGGGGGAAAGTGCCGGCCAC
GACGACGATAAACGGCCGCAGCTGCGCCTTGGGTGCAGTGGCCCCCTCACGGCCGGTG

ThrValSerGlyPheValSerLeuLeuAlaProGlyAlaLysGlnAsnValGlnLeuIle
841 ACTGTGTCGGATTGTTAGCCTCTCGCACCAGGCGCCAACGAGAACGTCCAGCTGATC
TGACACAGACCTAAACAATCGGAGGAGCGTGGTCCGGTCTGCAGTGGGACTATCGGAGTTG

AsnThrAsnGlySerTrpHisLeuAsnSerThrAlaLeuAsnCysAsnAspSerLeuAsn
901 AACACCAACGGCAGTTGGCACCTCAATAGCACGCCCTGAACCTGCAATGATAGCCTAAC
TTGTGGTTGCCGTCAACCGTGGAGTTATCGTGCCGGACTTGACGTTACTATCGGAGTTG

ThrGlyTrpLeuAlaGlyLeuPheTyrHisHisLysPheAsnSerSerGlyCysProGlu
961 ACCGGCTGGTTGGCAGGGCTTTCTATCACCAAGTTCAACTCTTCAGGCTGTCCTGAG
TGGCCGACCAACCGTCCCAGAAAGATACTGGTGGTCAAGTTGAGAAGTCCGACAGGACTC

ArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGlyProIleSerTyr
1021 AGGCTAGCCAGCTGCCGACCCCTTACCGATTTGACCAAGGGCTGGGGCCCTATCAGTTAT
TCCGATGGTCGACGGCTGGGAATGGCTAAAAGTGGTCCCAGCCGGATAGTCATA

AlaAsnGlySerGlyProAspGlnArgProTyrCysTrpHisTyrProProLysProCys
1081 GCCAACGGAAAGCGGCCCGACCAGCAGCCCTACTGCTGGCACTACCCCCCAAACCTTGC
CGGTTGCCCTCGCCGGGCTGGTCGCGGGGATGACGACCGTGTGGGGGGTTGGAAACG

GlyIleValProAlaLysSerValCysGlyProValTyrCysPheThrProSerProVal
1141 GGTATTGTGCCCGCGAAGAGTGTGTGGTCCGGTATATTGCTTCACTCCAGCCCCGTG
CCATAACACGGCGCTTCTCACACACACCAGGCCATAAACGAAGTGGAGGGTCGGGCAC

ValValGlyThrThrAspArgSerGlyAlaProThrTyrSerTrpGlyGluAsnAspThr
1201 GTGGTGGGAACGACCGACAGGTGGGGCGGCCACCTACAGCTGGGGTGGAAATGATACG
CACCAACCTTGCTGGCTGTCCAGCCCGCGGGTGGATGTCGACCCACTTTACTATGC

AspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPheGlyCysThrTrp
1261 GACGTCTCGCTTAACAATACCAGGCCACCGCTGGGCAATTGGTCCGGTGTACCTGG
CTGCAGAACGAGGAATTGTTATGGTCCGGTGGCGACCCGTTAACAGCAACATGGACC

MetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysValIleGlyGlyAla
1321 ATGAACTCAACTGGATTCAACAAAGTGTGGAGCGCCCTCTGTGTCATCGGAGGGCG
TACTTGAGTTGACCTAACGCTCGCGGAGGAACACAGTAGCCTCCCCGC

GlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisProAspAlaThrTyr
1381 GGCAACAAACCCCTGCACTGCCCACTGATTGCTCCGCACAGCATCCGGACGCCACATAC
CGTTGGTGGGACGTGACGGGGTACTAACGAAGGCGTGTAGGCCTGCGGTGTATG

SerArgCysGlySerGlyProTrpIleThrProArgCysLeuValAspTyrProTyrArg
1441 TCTCGGTGCGGCTCCGGTCCCTGGATCACACCCAGGTGCCTGGTCAGTACCCGTATAGG
AGAGCCACGCCGAGGCCAGGGACCTAGTGTGGTCCACGGACAGCTGATGGCATATCC

LeuTrpHisTyrProCysThrIleAsnTyrThrIlePheLysIleArgMetTyrValGly
1501 CTTTGGCATTATCCTTGACCATCAACTACACCATATTTAAATCAGGATGTACGTGGGA
GAAACCGTAAAGAACATGGTAGTTGATGTTGAAATAAATTTAGTCCTACATGCACCCCT

GlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGluArgCysAspLeu
1561 GGGGTGAAACACAGGCTGGAAAGCTGCCTGCAACTGGACGCGGGGCGAACGTTGCGATCTG
CCCCAGCTGTGTCCGACCTTCGACGGACGTTGACCTGCGCCCCGCTTGCACGCTAGAC

GluAspArgAspArgSerGluLeuSerProLeuLeuLeuThrThrGlnTrpGlnVal
1621 GAAGACAGGGACAGGTCCGAGCTCAGCCCCGTTACTGCTGACCAACTACACAGTGGCAGGTC
CTTCTGTCCCTGTCCAGGCTGAGTCGGGCAATGACGACTGGTGTGACCGTCCAG

FIG. 54C

1681 LeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIleHisLeuHisGln
 CTCGGTTCCTCACAAACCTACAGCCTGTCCACCGGCCTCATCCACCTCCACCAAG
 GAGGGCACAAGGAAGTGTGGATGGTCGGAACAGGTGGCCGGAGTAGGTGGAGGTGGTC

 1741 AsnIleValAspValGlnTyrLeuTyrGlyValGlySerSerIleAlaSerTrpAlaIle
 AACATTGTGGACGTGCAGTACTTGATCGGGTGGGTCAAGCATCGCTCTGGGCCATT
 TTGTAACACCTGCACGTCACTAACATGCCACCCCAGTCGTAGCGCAGGACCCGGTAA

 1801 LysTrpGluTyrValValLeuLeuPheLeuLeuAlaAspAlaArgValCysSerCys
 AAGTGGGAGTACGTCGTTCTCTGTTCTGCTTGAGACGCGCGCTGCTCCTGC
 TTCACCCATGCAGCAAGAGGACAAGGAAGACGAACGCTGCGCGCAGACGAGGACG

 1861 LeuTrpMetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeu
 TTGTGGATGATGCTACTCATATCCAAGCGGAGGCGGTTGGAGAACCTCGTAATACTT
 AACACCTACTACGATGAGTATAGGGTTCGCCCTCGCCGAAACCTTGGAGCATTATGAA

 1921 AsnAlaAlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPhe
 ATGCAGCATCCCTGGCCGGACGCACGGCTTGATCCTCCTCGTGTCTGCTT
 TTACGTCGTAGGGACCAGGCCCTGCGTGCCAGAACATAGGAAGGAGCACAAGAAGACGAAA

 1981 AlaTrpTyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrp
 GCATGGTATTGAAGGGTAAGTGGGTGCCCGAGCGGTCTACACCTCTACGGGATGTGG
 CGTACCATAAACTCCCATTCAACCCACGGCCTGCCAGATGTGAAAGATGCCCTACACC

 2041 ProLeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluVal
 CCTCTCCCTGCTCTGGCGTTGCCAGCGGGCGTACGCGCTGGACACGGAGGTG
 GGAGAGGAGGACGAGGACAACCGCAACGGGTCGCCGATGCGGACCTGTGCCCTCAC

 2101 AlaAlaSerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyr
 GCGCGCTGTTGGCGGTGTTCTCGTGGTTGATGGCGCTGACTCTGTCACCATAT
 CGCGCAGCACCGCCACAACAAGAGCAGCCAACTACCGCGACTGAGACAGTGGTATA

 2161 TyrLysArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGlu
 TACAAGCGCTATATCAGCTGGTCTTGTTGCTCAGTATTTCTGACCAAGAGTGGAA
 ATGTTCGCGATATAGTCGACACACGAACACCACCGAAGTCATAAAAGACTGGTCTCACCT

 2221 AlaGlnLeuHisValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIle
 GCGCAACTGCACGTGTGGATTCCCCCCTAACGTCCGAGGGGGCGCAGCGCGTCATC
 CGCGTTGACGTGACACACTAACGGGGAGTTGAGGCTCCCCCGCGCTGGCAGTAG

 2281 LeuLeuMetCysAlaValHisProThrLeuValPheAspIleThrLysLeuLeuAla
 TTACTCATGTGTGCTGTACACCCGACTCTGGTATTGACATACCAAATTGCTGCTGGCC
 AATGAGTACACACGACATGTGGGCTGAGACCATAACTGTAGTGGTTAACGACGACCGG

 2341 ValPheGlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArg
 GTCTTCGGACCCCTTGATTCTCAAGCCAGTTGCTAAAGTACCTACTTGTGCGC
 CAGAACGCTGGGAAACCTAACGAAGTTCGGTCAAACGAATTGATGAAACACGCG

 2401 ValGlnGlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrVal
 GTCCAAGGCCTCTCCGGTTCTGCGCGTTAGCGCGGAAGATGATCGGAGGCCATTACGTG
 CAGGTTCCGGAAAGAGGCCAAGACGCGCAATCGCGCTTACTAGCCTCCGGTAATGCAC

 2461 GlnMetValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThr
 CAAATGGTCATCATTAAAGTTAGGGCGCTTACTGGCACCTATGTTATAACCATCTCACT
 GTTACCACTAGTAATTCAATCCCCCGGAATGACCGTGGATACAAATATTGGTAGAGTGA

 2521 ProLeuArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProVal
 CCTCTCGGGACTGGGCGCACAACCGCTTGCAGAGATCTGGCGTGGCTGTAGAGCCAGTC
 GGAGAACCCCTGACCCCGTGTGGCCGAACGCTCTAGACCGGGCACCGACATCTCGGTCA

 2581 ValPheSerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThrAlaAlaCysGly
 GTCTTCTCCAAATGGAGACCAAGCTCATACCGTGGGGGGCAGATACCGCCGCGTGC
 CAGAACGAGGGTTTACCTCTGGTCGAGTAGTGCACCCCCCGTCTATGGCGCGCACGCCA

 2641 AspIleIleAsnGlyLeuProValSerAlaArgArgGlyArgGluIleLeuLeuGlyPro
 GACATCATCAACGGCTTGCCTGTTCCGCCCGCAGGGGGCGGGAGATACTGCTGGGCCA
 CTGTAGTAGTTGCCGAACGGACAAAGCGGGCGTCCCCGGCCCTCATGACGAGGCCGGT

FIG. 54D

2701 AlaAspGlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGln
 GCCGATGGAATGGTCTCCAAGGGGTGGAGGTTGCTGGCGCCATCACGGCGTACGCCAG
 CGGCTACCTTACCAAGAGGTTCCCCACCTCCAACGACCACGGTAGTGCGCATGCCAG

 2761 GlnThrArgGlyLeuLeuGlyCysIleIleThrSerLeuThrGlyArgAspLysAsnGln
 CAGACAAGGGGCCTCTAGGGTGCATAATCACCAAGCTAACTGGCCGGGACAAAAACCAA
 GTCTGTTCCCCGGAGGATCCCACGTATTAGTGGTCGGATTGACCGGCCCTGTTTGGTT

 2821 ValGluGlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeuAlaThrCysIle
 GTGGAGGGTGGAGGTCCAGATTGTCAACTGCTGCCAACCTTCCCTGGCAACGTGCATC
 CACCTCCCACCTCAGGTCTAACACAGTTGACGACGGGTTGGAAAGGACCGTTGCACGTAG

 2881 AsnGlyValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLys
 ATGGGGTGTGCTGGACTGTCTACCACGGGGCGGAACGAGGACCATCGCGTCACCCAG
 TTACCCCACACGACCTGACAGATGGTCCCCGGCTTGCTCTGGTAGCGCAGTGGGTT

 2941 GlyProValIleGlnMetTyrThrAsnValAspGlnAspLeuValGlyTrpProAlaPro
 GGTCCTGTCATCCAGATGTATACCAATGTAGACCAAGACCTTGTGGCTGGCCGCTCCG
 CCAGGACAGTAGGTCTACATATGGTTACATCTGGTTCTGGAAACACCCGACCGGGCGAGGC

 3001 GlnGlySerArgSerLeuThrProCysThrCysGlySerSerAspLeuTyrLeuValThr
 CAAGGTAGCCGCTCATGGACACCCTGCACTTGCGGCTCTCGGACCTTACCTGGTCACG
 GTTCCATGGCGAGTAAGTGTGGACGTGAACGCCAGGAGCCTGGAAATGGACAGTGC

 3061 ArgHisAlaAspValIleProValArgArgArgGlyAspSerArgGlySerLeuLeuSer
 AGGCACGCCGATGTCATTCCCGTGCGCCGGGGGTGATAGCAGGGGCAGCCTGCTGTCG
 TCGTGCGGCTACAGTAAGGGCACGCCGCCCCACTATCGTCCCCGTCGGACGACAGC

 3121 ProArgProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGly
 CCCCGGCCATTCTACTTGAAAGGCTCCTCGGGGGGTCCGTTGTGCCCCGGGGGG
 GGGGCCGGGTAAAGGATGAACTTCCGAGGAGCCCCCAGGCGACAACACGGGGCGCCCC

 3181 HisAlaValGlyIlePheArgAlaAlaValCysThrArgGlyValAlaLysAlaValAsp
 CACGCCGTGGCATATTAGGGCCGGTGTGCAACCGTGGAGTGGCTAAGGCCGGTGGAC
 GTGCGGCACCGTATAATCCCGCGCCACACGTGGCACCTCACCGATTCCGCCACCTG

 3241 PheIleProValGluAsnLeuGluThrThrMetArgSerProValPheThrAspAsnSer
 TTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTACGGATAACTCC
 AAATAGGGACACCTCTGGATCTGTGGTACTCCAGGGGCCACAAGTGCCTATTGAGG

 3301 SerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaProThrGlySer
 TCTCCACCAAGTAGTGCCCCAGAGCTTCCAGGTGGCTCACCTCCATGCTCCCACAGGCAGC
 AGAGGTGGTCATCACGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGTCG

 3361 GlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeu
 GGCAAAAGCACCAAGTCCCGGCTGCATATGCAGCTCAGGCTATAAGGTGCTAGTACTC
 CCGTTTCGTGGTCCAGGGCGACGTATACTCGAGTCCGATATTCCACGATCATGAG

 3421 AsnProSerValAlaAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIle
 AACCCCTCTGTGCTGCAACACTGGGCTTGGCTTACATGTCCAAGGCTCATGGGATC
 TTGGGGAGACAACGACGTTGTGACCGAAACACGAATGTACAGGTTCCGAGTACCC

 3481 AspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSer
 GATCCTAACATCAGGACCGGGGTGAGAACAAATTACCAACTGGCAGCCCCATCACGTACTCC
 CTAGGATTGAGTCCTGGCCACTCTTGTAAATGGTACCGTCGGGTAGTGCATGAGG

 3541 ThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIle
 ACCTACGGCAAGTTCTGCGACGGCGGGGTGCTCGGGGGCGCTTATGACATAATAATT
 TGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCAATACTGTATTATTAA

 3601 CysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAsp
 TGTGACGAGTGCCTACCGGATGCCACATCCATCTGGGATCGGCACGTGCTCCTTGAC
 ACAGTGCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAGCCGTGACAGGAACCTG

FIG. 54E

GlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySer
3661 CAAGCAGAGACTGCGGGGCGAGACTGGTTGTGCTGCCACCGCCACCCCTCCGGGCTCC
GTTCGTCTCTGACGCCCCGCTCTGACCAACACGAGCGGTGGCGGGTGGGAGGCCCCGAGG

ValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIlePro
3721 GTCACTGTGCCCATCCAAACATCGAGGAGGGTTGCTCTGTCACCACCGGAGAGATCCT
CAGTGACACGGGGTAGGGTTGAGCTCCTCCAACGAGACAGGTGGTGGCCTCTAGGGA

PheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCys
3781 TTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCTCATCTCTGT
AAAATGCCGTTCCGATAAGGGGGAGCTTCATTAGTTCCCCCTCTGTAGAGTAGAACACA

HisSerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAla
3841 CATTCAAAGAAGAAGTGCAGAACACTGCCGAAAGCTGGTCGATTGGGCATCAATGCC
GTAAGTTCTCTCACGCTGCTTGAGCGCGTTGACCGTAACCGTAGTTACGG

ValAlaTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValVal
3901 GTGGCCTACTACCGCGGTCTTGACGTGTCCGTCATCCGACCAGCGCGATGTTGTCGTC
CACCGGATGATGGCGCCAGAAGTGCACAGGAGTAGGGCTGGTCGCCGCTACAACAGCAG

ValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCys
3961 GTGGCAACCGATGCCCTCATGACCGGCTATACCGCGACTTCGACTCGGTGATAGACTGC
CACCGTTGGCTACGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACG

AsnThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThr
4021 AATACGTGTGTCACCCAGACAGTCGATTCAGCCTTGACCTTACCTCACCATTGAGACA
TTATGCACACAGTGGTCTGTCAGCTAAAGTCGGAACCTGGGATGGAAGTGGTAACCTGT

IleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGly
4081 ATCACGCTCCCCCAGGATGCTGTCCTCGCACTCAACGTCGGGGCAGGACTGGCAGGGGG
TAGTGCAGGGGGGTCTACGACAGAGGGCGTGAGTTGAGCAGCCCCGTCCTGACCGTCCCC

LysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSer
4141 AAGCCAGGCATCTACAGATTGTCGGCACCGGGGGAGCGCCCCTCCGGCATGTTGACTCG
TTGGTCCGTAGATGTCATAACACCCTGGCCCCCTCGGGGGAGGCCGTACAAGCTGAGC

SerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGlu
4201 TCCGTCCTCTGTGAGTGTATGACGCAGGCTGTGCTTGGTATGAGCTCACGCCGCCAG
AGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGCAGGGCGGCTC

ThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHis
4261 ACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGCTTCCCGTGTGCCAGGACCAT
TGATGTCATCCGATGCTCGCATGTTGAGTGGGGCCCCGAAGGGCACACGGTCTGGTA

LeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSer
4321 CTTGAATTGGGAGGGCGTCTTACAGGCCACTCATATAGATGCCACTTCTATCC
GAACCTAAACCCCTCCCGCAGAAATGTCGGAGTGAGTATATCTACGGGTGAAAGATAGG

GlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCys
4381 CAGACAAAGCAGAGTGGGAGAACCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTG
GTCTGTTCTGTCACCCCTTGGAAAGGAATGGACCATCGCATGGTCGGTGGCACACG

AlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeu
4441 GCTAGGGCTCAAGCCCCCTCCCCCATCGTGGGACCAAGATGTTGAAAGTGGTTGATTGCC
CGATCCCAGGTTGGGGAGGGGTAGCACCCCTGGTCTACACCTCACAAACTAACGGAG

LysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGlu
4501 AAGCCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGCGCTGTTAGAATGAA
TTCGGGTGGGAGGTACCCGGTTGTTGAGTATGTCGACCCGCAACAAGTCTTACTT

IleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGlu
4561 ATCACCCCTGACGCACCCAGTCACCAAATACATCATGACATGCGTGGCCGACCTGGAG
TAGTGGGACTGCGTGGGTCAAGTGGTTATGTTAGTACTGTACGTACGCCGCTGGACCTC

ValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaTyrCys
4621 GTCGTCACGAGCACCTGGGTGCTCGTTGGCGCGTCCCTGGCTGCTTGGCCGCGTATTG
CAGCAGTGCTCGTGGACCCACGAGCAACCGCCGCAGGACCGACGAAACCGGGCGATAACG

FIG. 54F

LeuSerThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIle
4681 CTGTCAACAGGGCTGCGTGGTCATAAGTGGGCAGGGTCGCTTGTCGGGAAGGCCGGCAATC
GACAGTTGTCGACGCCAGTATCACCCGTCAGCAGAACAGGCCCTCGGCCGTTAG

IleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHis
4741 ATACCTGACAGGGAAAGTCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCAC
TATGGACTGTCCTTCAGGAGATGGCTCTAAGCTACTCTACCTCTCACGAGAGTCGTG

LeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGly
4801 TTACCGTACATCGAGCAAGGGATGATGCTGCCGAGCAGTTCAAGCAGAACAGGCCCTCGGC
AATGGCATGTAGCTCGTCCCTACTACGAGCGGCTCGTCAAGTTGCTTCCGGGAGCCG

LeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAspTrp
4861 CTCTGCAGACCGCGTCCGTCAGGCAGAGGTTATCGCCCTGCTGTCAGACCAACTGG
GAGGACGTCTGGCGCAGGGCAGTCGTCCTCAAATAGCGGGGACGACAGGTCTGGTTGACC

GlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyr
4921 CAAAAAACTCGAGACCTCTGGCGAAGCATATGTGAACTTCATCAGTGGATAACAATAC
GTTTTGAGCTCTGGAAGACCCGCTCGTACACCTGAAGTAGTCACCCATTGTTATG

LeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThr
4981 TTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTACA
AACCGCCCGAACAGTTGCGACGGACCATTGGGCGGTAACGAAGTAACCGAAAATGT

AlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGly
5041 GCTGCTGTCACCAGCCCCTAACCAACTAGCCAAACCCCTCTTCAACATATTGGGGGGG
CGACGACAGTGGTCGGGTGATTGGTGATCGGTTGGGAGGAGAAGTTGTATAACCCCCCCC

TrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeu
5101 TGGGTGGCTGCCAGCTGCCGCCGGCTACTGCCTTGTGGCGCTGGCTTAAACCGAAC
ACCCACCGACGGGTCGAGCGGGCGGGCCACGGCGATGACGGAAACACCCGCGACCGAAT

AlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGly
5161 GCTGGCGCCGCCATCGGCAGTGTGGACTGGGAAGGTCCTCATAGACATCCTGCAGGG
CGACCGCGCGGCTAGCCGTACAACCTGACCCCTCCAGGAGTATCTGTAGGAACGTCCC

TyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValPro
5221 TATGGCGGGCGTGGCGGGAGCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCC
ATACCGCGCCCGACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGGG

SerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValVal
5281 TCCACGGAGGACCTGGTCAATCTACTGCCGCCATCCTCTGCCGGAGCCCTCGTAGTC
AGGTGCCTCTGGACCAGTTAGATGACGGCGGTAGGAGAGCGGGCCCTCGGGAGCATCAG

GlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGln
5341 GGC GTGGTCTGTGCAAGCAAACTGCGCCGGCACGTTGGCCGGCGAGGGGGCAGTGCAG
CCGCACCAAGACACGTCGTTATGACCGGGCGCTGCAACCGGGCCGCTCCCCCGTCACGTC

TrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyr
5401 TGGATGAACCGGCTGATAGCCTCGCCTCCGGGGAAACCATGTTCCCCACGCACTAC
ACCTACTTGGCCGACTATCGGAAGCGGGAGGGCCCCCTGGTACAAAGGGGTGCGTGATG

ValProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThr
5461 GTGCCGGAGAGCGATGCACTGCCCGTCAGTGCCTACTGCCATACTCAGCAGCCTCACTGTAACC
CACGGCCTCTCGTACGTCGACGGCGCAGTGCAGGTATGAGTCGCGGAGTGACATTGG

GlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGly
5521 CAGCTCTGAGGGCGACTGCACCAAGTGGATAAGCTGGAGTGTACCAACTCCATGCTCCGGT
GTCGAGGACTCCGCTGACGTGGTACCTATTGAGCCTCACATGGTGAGGTACGAGGCCA

SerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrp
5581 TCCTGGCTAAGGGACATCTGGACTGGATATGCGAGGTGGAGCAGCTTAAAGACCTGG
AGGACCGATTCCCTGTAGACCCCTGACCTATACTGCTCCACAACTCGCTGAAATTCTGGACC

LeuLysAlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGly
5641 CTAAAAGCTAACGCTCATGCCACAGCTGCCCTGGATCCCTTGTGTCCTGCCAGCGCGGG
GATTTTCGATTGAGTACGGTGTGACGGACCCCTAGGGGAAACACAGGACGGTCGCGGCC

FIG. 54G

TyrLysGlyValTrpArgValAspGlyIleMetHisThrArgCysHisCysGlyAlaGlu
5701 TATAAGGGGGCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAG
ATATTCCCCCAGACCCTCACCTGCCGTAGTACGTGTAGCGACGGTGACACCTCGACTC

IleThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArgThrCysArgAsn
5761 ATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGCTCTAGGACCTGCAGGAAC
TAGTGACCTGTACAGTTTGCCCTGCTACTCCTAGCAGCCAGGATCCTGGACGTCTTG

MetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeuPro
5821 ATGTGGAGTGGGACCTTCCCCATTAAATGCCTACACCACGGGCCCCCTGTACCCCCCTTCCT
TACACCTCACCTGGAGGGTAATTACGGATGTGGTCCCAGGGACATGGGGGGAGGA

AlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArg
5881 GCGCCGAACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAGG
CGCGGCTTGATGTGCAAGCGCGATACCTCCACAGACGTCTCCTTACACCTCTATTCC

GlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysProCys
5941 CAGGTGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCGTGC
GTCCACCCCTGAAGGTGATGCACTGCCATACTGATGACTGTTAGAGTTACGGGCACG

GlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAla
6001 CAGGTCCCCTGCAAGCCCCATTTCACAGAATTGGACGGGTGCGCCTACATAGGTTGCG
GTCCAGGGTAGCGGGCTTAAAAAGTGTCTAACCTGCCACGCGGATGTATCCAACGC

ProProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyr
6061 CCCCCCTGCAAGCCCCTTGCTGCGGGAGGGTATCATTCAAGAGTAGGACTCCACGAATAC
GGGGGGACGTTGGAAACGACGCCCTCCATAGTAAGTCTCATCCTGAGGTGCTTATG

ProValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMet
6121 CCGGTAGGGTCGCAATTACCTTGCAGGCCGAGGGAGGTATCATTCAAGAGTAGGACTCCACGAATAC
GGCCATCCCAGCGTTAATGGAACGCTCGGGCTTGGCCTGCACCGGCACAACCTGCAGGTAC

LeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySer
6181 CTCACTGATCCCTCCCATATAACAGCAGAGGGCGGCCGGCGAAGGTTGGCGAGGGGATCA
GAGTGACTAGGGAGGGTATATTGTCGTCTCCGCCGGCCGCTTCAACCGCTCCCTAGT

ProProSerValAlaSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThr
6241 CCCCCCTCTGGCCAGCTCTCGGCTAGCAGCTATCCGCTCCATCTCAAGGCAACT
GGGGGGAGACACCGGTGAGGAGCCGATCGTCGATAGGCAGGGTAGAGAGTTCCGTTGA

CysThrAlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArg
6301 TGCAACCGCTAACCATGACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCTATGGAGG
ACGTGGCGATTGGTACTGAGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTCC

GlnGluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAsp
6361 CAGGAGATGGCGGGCAACATCACCAAGGGTTGAGTCAGAAAACAAAGTGGTATTCTGGAC
GTCTCTACCGCCGTTGAGTGGTCCCAACTCAGCTTTGTTACCAACTAACGACCTG

SerPheAspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIle
6421 TCCTTCGATCCGCTTGTGGCGGGAGGAGGACGGAGCAGGGAGATCTCGTACCCGCAGAAATC
AGGAAGCTAGCGAACACCGCCTCCCTGCTGCCCTAGAGGCATGGCGTCTTAGGGCTTTAG

LeuArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsn
6481 CTGCGGAAGTCTCGGAGATTGCCAGGCCGCTGCCGTTGGCGCGCCGGACTATAAC
GACGCCCTCAGAGCCTAAGCGGGTCCGGGACGGGCAAACCGCGCCGGCTGATATTG

ProProLeuValGluThrTrpLysLysProAspTyrGluProProValValHisGlyCys
6541 CCCCCGCTAGTGGAGACGTGGAAAAAGCCGACTACGAACCACTGTGGTCATGGCTGT
GGGGCGATCACCTCTGACCTTTGGGCTGATGCTTGGTGACACCAGGTACCGACA

ProLeuProProProLysSerProProValProProProArgLysLysArgThrValVal
6601 CCGCTTCCACCTCCAAAGTCCCCTCCTGTGCCTCCGCCCTCGGAAGAAGCGGACGGTGGTC
GGCGAAGGTGGAGGTTTCAAGGGAGGACACGGAGGCGAGCCTTTCGCGCTGCCACCA

LeuThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySer
6661 CTCACTGAATCAACCTATCTACTGCCCTGGCCGAGCTCGCCACCAAGAAGCTTGGCAGC
GAGTGACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTCGAAACCGTCG

FIG. 54H

SerSerThrSerGlyIleThrGlyAspAsnThrThrSerSerGluProAlaProSer
6721 TCCTCAACTTCCGGCATTACGGGCACAATACGACAACATCCTGAGGCCGCCCTCT
AGGAGTTGAAGGCCGTAATGCCGCTGTTATGCTGTTAGGAGACTCGGGCGGGGAAGA

GlyCysProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGlu
6781 GGCTGCCCCCCCAGCTCGACGCTGAGTCCTATTCCCATGCCCTGGAGGGGGAG
CCGACGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGACCTCCCCCTC

ProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAla
6841 CCTGGGGATCCGGATCTTAGCGACGGTCATGGTCAACGGTCAGTAGTGAGGCCAACGCG
GGACCCCTAGGCCTAGAACATCGCTGCCAGTACCAAGTGCAGTCATCACTCCGGTTGCGC

GluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeuValThrProCys
6901 GAGGATGTCGTGCTGCTCAATGCTTACTCTGGACAGGCGACTCGTCACCCCGTGC
CTCCTACAGCACACGACGAGTTACAGAATGAGAACCTGTCGCGTGAGCAGTGGGCACG

AlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHis
6961 GCCGCGGAAGAACAGAAACTGCCCATCAATGCACTAAGCAACTCGTGCTACGTACCCAC
CGCGCCTTCTTGTCTTGACGGTAGTTACGTGATTGTTGAGCAACGATGCACTGGTG

AsnLeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysValThrPhe
7021 AATTGGTGTATTCCACCACCTCACGCACTGCTTGCACAGGAGAAAGTCACATT
TTAAACCACATAAGGTGGTAGTGCACGAGCTTCCGTCTTCAGTGTAAA

AspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAlaAla
7081 GACAGACTGCAAGTTCTGGACAGGCCATTACCAAGGACGTACTCAAGGAGGTTAAAGCAGCG
CTGCTGACGTTCAAGACCTGTCGTAATGGCCTGCACTGAGTTCCCAATTTCGTCGC

AlaSerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSerLeuThrProPro
7141 GCGTCAAAAGTGAAGGCTAACCTGCTATCCGTAGAGGAAGCTTGACGCTGACGCC
CGCAGTTTCACTTCCGATTGAACGATAGGCATCTCCTCGAACGTCGGACTGCGGGGG

HisSerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCysHisAlaArgLys
7201 CACTCAGCCAATCCAAGTTGGTTATGGGGCAAAAGACGTCGTTGCCATGCCAGAAA
GTGAGTCGGTTAGGTTCAAACCAATACCCGTTCTGCAAGGCAACGGTACGGTCTTC

AlaValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsnValThrProIle
7261 GCGCTAACCCACATCAACTCCGTGAAAGACCTCTGGAAGACAAATGTAACACCAATA
CGCATTGGGTGAGTTGAGGCACACCTTCTGGAAGACCTTCTGTTACATTGTGGTTAT

AspThrThrIleMetAlaLysAsnGluValPheCysValGlnProGluLysGlyGlyArg
7321 GACACTACCATCATGGCTAACGAGGTTTCTGCGTCAGCCTGAGAAGGGGGTCGT
CTGTGATGGTAGTACCGATTCTGCTCCAAAGACGCAAGTCGGACTCTCCCCCAGCA

LysProAlaArgLeuIleValPheProAspLeuGlyValArgValCysGluLysMetAla
7381 AAGCCAGCTCGTCTCATCGTGTCCCCGATCTGGCGTGCACGCTGCGAAAGATGGCT
TTCGGTCGAGCAGAGTAGCACAAGGGCTAGACCCGCACCGCACACGTTCTACCGA

LeuTyrAspValValThrLysLeuProLeuAlaValMetGlySerSerTyrGlyPheGln
7441 TTGTACGACGTGGTTACAAAGCTCCCTGGCGTGTGGAAAGCTCCTACGGATTCCAA
AACATGCTGACCAATGTTGAGGGAAACGGCACTACCCCTTCGAGGATGCCATAAGGTT

TyrSerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSerLysLysThrPro
7501 TACTCACCAGGACAGCAGGGTTGAATTCTCGTGTGCAAGCGTGGAAAGTCCAAGAAAACCCCA
ATGAGTGGTCTGTCGCCAACCTAAGGAGCACGTTGACCTTCAGGTTCTTGGGG

MetGlyPheSerTyrAspThrArgCysPheAspSerThrValThrGluSerAspIleArg
7561 ATGGGGTTCTCGTATGATACCCGCTGCTTGTACTCCACAGTCAGTCACTGAGAGCGACATCCG
TACCCCAAGAGCATACTATGGCGACGAAACTGAGGTGTCAGTGAATCTCGCTGTAGGCA

ThrGluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArgValAlaIleLys
7621 ACGGAGGAGGCAATCTACCAATGTTGACCTCGACCCCCAAGCCCGTGGCCATCAAG
TGCTCCTCCGTTAGATGGTTACAACACTGGAGCTGGGGTTCGGGCGCACCGGTAGTTC

SerLeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnCys
7681 TCCCTCACCGAGAGGCTTATGTTGGGGCCCTCTTACCAATTCAAGGGGGAGAACTGC
AGGAGTGGCTCTCGAAATAACCCCCGGGAGAATGGTTAAGTCCCCCTTGTACG

FIG. 54I

7741 GlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThr
GGCTATCGCAGGTGCCGCGCAGCAGGGCTACTGACAACTAGCTGTGGTAACACCCTCACT
CCGATAGCGTCCACGGCGCGTCGCCGCATGACTGTTGATCGACACCATTGTGGGAGTGA

7801 CysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeu
TGCTACATCAAGGCCGGCAGCCTGTCGAGCCGAGGGCTCCAGGACTGCACCATGCTC
ACGATGTAGTTCCGGGCCCCGTCGGACAGCTGGCGTCCCAGGTCCTGACGTGGTACGAG

7861 ValCysGlyAspAspLeuValValIleCysGluSerAlaGlyValGlnGluAspAlaAla
GTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGCG
CACACACCGCTGCTGAATCAGCAATAGACACTTCGCGCCCCCAGGTCCCTGCGCCGC

7921 SerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProProGlyAspProPro
AGCCTGAGAGGCCCTCACGGAGGGCTATGACCAAGGTACTCCGCCCCCTGGGGACCCCCA
TCGGACTCTCGGAAGTGCCTCCGATACTGGTCATGAGGCGGGGGACCCCTGGGGGT

7981 GlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnValSerValAlaHis
CAACCAGAACATCGACTTGGAGCTCATAACATCATGCTCCTCCAACGTGTCAGTCGCCAC
GTTGGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTGACAGTCAGCGGGTG

8041 AspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThrProLeuAlaArg
GACGGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCCTACAACCCCCCTCGCGAGA
CTGCCGCGACCTTCTCCAGATGATGGAGTGGGACTGGGATGTTGGGGAGCGCTCT

8101 AlaAlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMet
GCTGCGTGGGAGACAGCAAGACACACTCCAGTCAATTCTGGCTAGGCAACATAATCATG
CGACGCACCCCTGTCGTTCTGTGAGGTAGTTAAGGACCGATCCGTTGTATTAGTAC

8161 PheAlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeuIle
TTTGCACACTGTGGCGAGGATGATACTGATGACCCATTCTTAGCGTCCTTATA
AACGGGGGTGTGACACCCGCTCTACTATGACTACTGGTAAAGAAATCGCAGGAATAT

8221 AlaArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIle
GCCAGGGACCAAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCTGCTACTCCATA
CGGCCCTGGTCGAACCTGTCGGGAGCTAACGCTCTAGATGCCCGACGATGAGGTAT

8281 GluProLeuAspLeuProProIleIleGlnArgLeu
GAACCACTTGATCTACCTCCAATCATTCAAAGACTC
CTTGGTGAACTAGATGGAGGTTAGTAAGTTCTGAG

FIG. 55A

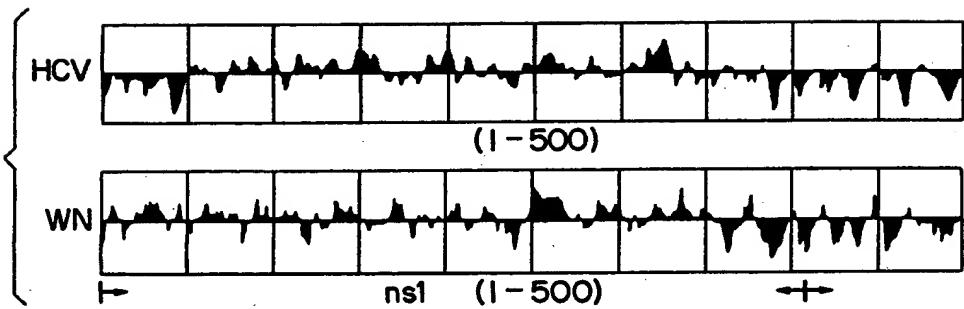


FIG. 55B

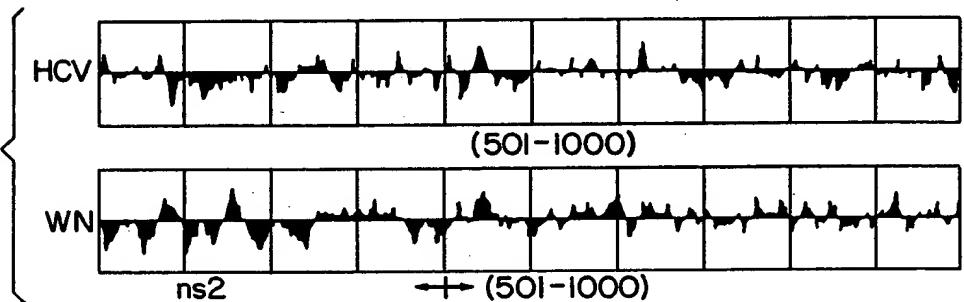


FIG. 55C

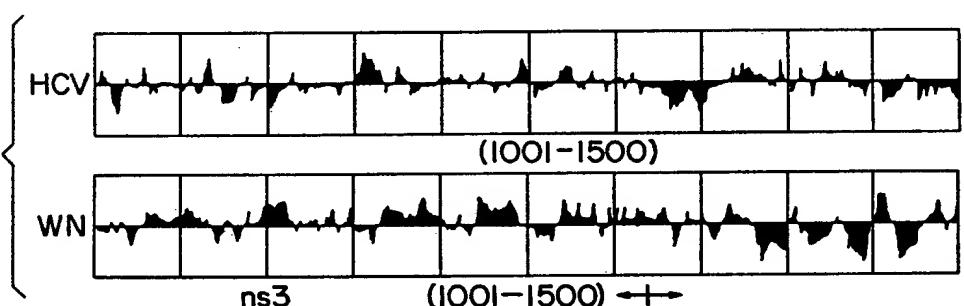


FIG. 55D

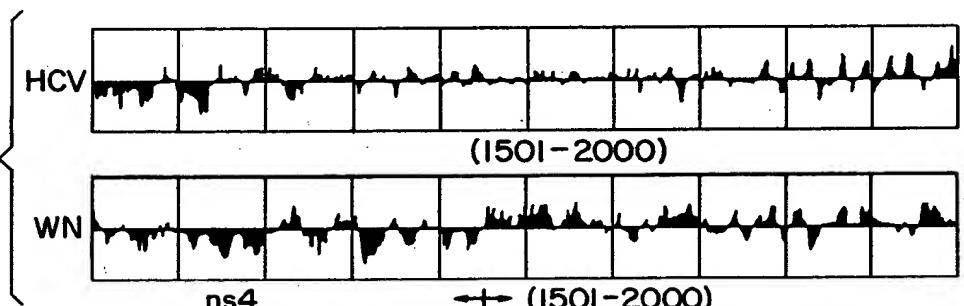


FIG. 55E

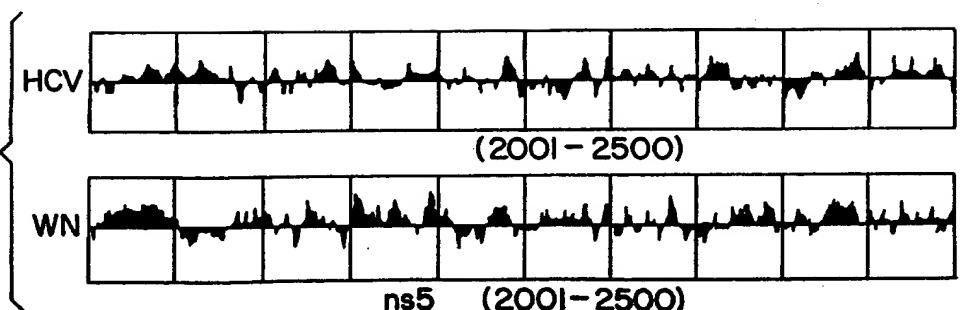


FIG. 56

Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys Gly Phe Ala Asp
1 CCCGGCTAGGTGGCGCAATTGGTAAGGTCAATCCGATAACCCATTCCAGTGCATGGCTTACGTGGCTTCGCCG
GGCCGCATCCAGGCCATTAAACCCATTCCAGTGCATGGCTTACGTGGCTTCGCCG
Leu Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Leu Gly Gly Ala Ala Arg Ala Leu Ala
61 ACCTCATGGGTACATACCGCTCGTCCGGGCCCTCTGGAGGGCTGCCAGGGCCCTGG
TGGAGTACCCCCATGTTATGGCAGGCCGGGGAGAACCTCCGGACGGTCCGGACC
His Gly Val Arg Val Leu Glu Asp Gly Val Asn Tyr Ile Ala Thr Gly Asn Leu Pro Gly Cys
121 CGCATGGCTCCGGGTTCTGGAAGACGGCGTGAACATATGCCAACAGGGAACCTTCCCTGGTT
GGGTACCCGAGGCCAAGACCTTCTGCCGCACTTGATACGTTGTCCTGGAAAGGACCAA
Ser Phe Ser Ile Phe Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser Ala Tyr
181 GCTCTTCTCTTCTCCCTCTGGCCCTGCTCTTGCTTGACTGTGCCGCTTCGGCCT
CGAGAAAGAGATAAGGAAGACGGGACGGGACGAGAACGAACTGACACGGCGAAGCCGGA

-----overlap with CA167b-----

Gln Val Arg Asn Ser Thr Gly Leu Tyr His Val Thr Asn Asp Cys Pro Asn Ser Ser Ile
241 ACCAAGTGGCAACTCCACGGGGCTTACACGTCACCAATGATTGCCCTAACTCGAGTA
TGGTTCACGGGTGAGGTGCCGGAAATGGTAGGACGTGGTACTAACGGGATGAGCTCAT

Val Tyr Glu Ala Ala Asp Ala Ile Leu His Thr Pro Gly Cys Val Pro Cys Val Arg Glu
301 TTGTGTACGAAGCGGGCGATGCCATCCTGCACACTCCGGGGTGGCTCCCTTGGCTTCGCTG
AACACATGCTTGGGGCTACGGTAGGACGTGGTACTAACGGGATGGGATGCCACGGCAAGCACAAGCAC

Gly Asn Ala Ser Arg Cys Trp Val Ala Met Thr Pro Thr Val Ala
361 AGGGCAACGGCTCGAGGTGGCTGGCATGCCATACGGCTGGCC
TCCCGTTGGGAGGCTCCACAACCCACCGCTACTGGGGATGCCACGG

1 LysLysAsnLysArgAsnThrAsnArgArgProGlnAspValLeuProGlyGlyGly
 AAAAACAACCTAACACCAACCGTGGCCACAGGACGTCAAGTCCCCGGTGGC
 TTTTTTTTGTGATTGTCATTTGGTGGCAAGCGGGTGTCCCTGCAGTCAGGCCCACCGC
 GlnIleValGlyGlyValTyrlLeuLeuProArgArgGlyProArgLeuGlyValArgAla
 61 GTCAAGATCGTTGGTGGAGTTACTTGTTGCCGCCAGGGGCCCTAGATTGGGTGTGGCG
 CAGTCTAGCAAACCTCAAATGAACAAACGGGGCTCCCCGGGATCTAACCCACACGGC
 ThrArgLysThrSerGluArgSerGlnProArgGlyArgArgGlnProlineProLySala
 121 CGACCGAGAAAGACTTCGAGCGGGTGCACACCTCGAGGTAGACGCCAGGGCTATCCCCAAGG
 GCTGCTTCTGAAGGCTCGCCAGCGTTGGAGCTCATCTGGTGGGATAGGGTTCC
 ArgArgProgluGlyArgThrTrpAlaGlnProGlyTyrProTrpProLeuTyrGlyAsn
 181 CTCGTCGGCCCGAGGGCAGGACCTGGGCTCAGCCCCGGTACCCCTGGCCCTATGGCA
 GAGCAGCGGGCTCCGGCTCTGACCCGAGTGGGGCCATGGGAACCGGGGAGATAACCGT
 GluglycysGlyTrpAlaGlyTrpLeuLeuSerProArgGlySerArgProserTrpGly
 241 ATGAGGGCTGGGGTGGGGGATGGCTCTGTCTCCCGTGGCTCTGGCCTAGCTGGG
 TACTCCCGACGCCAACCGGCCCTACCGAGGACAGAGGGCACCCGAGGGATCGACCC

 ProThrAspProArgArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCys
 301 GCCCACAGACCCCCGGCGTAGGTGGCGCAATTGGGTAAGTCATCGATAACCTTACGT
 CGGGGTGTCGGGGCCGCATCCAGGGCTAAACCCATTCCAGTAGCTATGGGAATGCA

 GlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAla
 361 GCGGCTCGCCGACCTCATGGGGTACATACCGCTCGGGGCCCTCTGGAGGGCGCTG
 CGCCGAAGCGGGCTGGAGTACCCCATGATGGCAGGCCAGGGAGAACCTCGCGAC

 overlap with CA216a
 ArgAlaLeuAlaHisGlyValArgValLeuGlyAsnTyrAlaThrGlyAsn
 421 CCAGGGCCCTGGCGCATGGGTCTGGAAAGACGGGGTGAACCTATGCAAACAGGG
 GGTCCCGGGACCGCGTACCGCAGGCCAACGAGAAAGAGATGGAAAG

 LeuProGlyCysSerPheSerThrPhe
 481 ACCTTCCTGGTTGCTCTTCTCTACCTTC
 TGGAAAGGACCAACGAGAAAAGAGATGGAAAG

FIG. 57

FIG. 58A

#MetSerValValGlnProProGlyProProLeu

- 1 CGCAGAAAGCGTCTAGCCATGGCGTTAGTATGAGTGTGTCAGGCCCTCCAGGACCCCC
GGTCTTTCGCAAGATCGTACCGCAATCATACTCACAGCACGTCGGAGGTCTGGGGGG
ProGlyGluProAM
- 61 TCCCGGGAGAGCCATAGTGGTCTGGGAACCGGTGAGTACACCGGAATTGCCAGGACGAC
AGGGCCCTCTCGGTATCACCAGACGCCTGGCCACTCATGGCCTTAACGTCCTGCTGCTG
#MetProGlyAspLeuGlyValProProGlnAsp
- 121 CGGGTCCTTCTGGATCAACCCGCTCAATGCCTGGAGATTGGCGTGCCCCCGCAAGA
GCCCAAGAAAGAACCTAGTTGGCGAGTTACGGACCTCTAAACCCGACGGGGGTCT
OP AM GlyAlaCys
CysAM *
- 181 CTGCTAGCCGAGTAGTGTGGTGGCGAAAGGCCCTTGTGGTACTGGCTGATAAGGGTGT
GACGATGGCTCATCACAAACCCAGCGCTTCCGGAACACCATGACGGACTATCCCACGAA
GluCysProGlyArgSerArgProCysThrMetSerThrAsnProLysProGlnLys

FIG. 58B

241 GCGAGTCCCCGGGAGGTCTCGTAGACCGTGCACCATGAGCACGAATCCTAACCTCAA
CGCTCACGGGGCCCTCCAGAGCATCTGGCACGTGGTACTCGTGCTTAGGATTGGAGTT
LysAsnLysArgAsnThrAsnArgArgProGlnAspValLysPheProGlyGlyGlyGln

301 AAAAAACAAACGTAACACCAACCGTGCACAGGACGTCAAAGTTCCGGTGGCGTC
TTTTTGTGTTGCATTTGTGGTTGGCAGGGGTCTGCAGTTCAAGGCCACCGCCAG
IleLeuValGlyGlyValTyrIleLeuProArgArgGlyProArgLeuGlyValArgAlaThr

361 AGATCGCTTGGAGTTACTTTGCTGCCCCAGGGGCCATAGTTGGGTGTCGGCGGA
TCTAGCAACCACCTCAAATGAACAAACGGCGCTCCCGGATCTAACCCACACGGCGCT

ArgLysThrSerGluArgSerGlnProArgGlyArgArgGlnProIleProLeuAlaArg

421 CGAGAAAGACTTCCGAGGGTTCGCACCTCGAGGTAGACGTCAGCCATATCCCCAAGGCTC
GCTCTTCTGAAGGCTGCCAGCGTTGGAGCTCCATCTGCAGTCGGATAGGGTTCCGAG
ArgProGluGlyArgThrTrpAlaGlnProGlyTyrProTrpProLeuTyrGlyAsnGlu

481 GTCGGCCGAGGGCAGGACCTGGCTCAGCCCCGGTACCCCTGGCTATGGCAATG
 CAGCCGGCTCCCGTGGACCCGAGTCGGGCCATGGAAACGGGAGATAACCGTAC
 GlyCysGlyTrpAlaGlyTrpLeuSerProArgGlySerArgProSerTrpGlyPro
 -----overlap with CA290a-----
 541 AGGGCTGGGGATGGCTCCCTGTCTCCGGCTCTGGCTCTGGCTAGCTGGGCC
 TCCCCGACGCCACCCGGCCATTACCGAGGGCACAGAGGGAGCCGAGCCCCGG
 ThrAspProArgArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCysGly

 601 CCACAGACCCCCGGCGTAGGTCGGCAATTGGGTAAGGTATCGATAACCCTAACG
 GGTGTCTGGGGGCCATCCAGGGCGTTAAACCCATTCCAGTAGCTATGGGAATGCACGC
 Phe

 661 GCTTC
 CGAAG

- * = Start of long HCV ORF
- | = Putative first amino acid of large HCV polyprotein
- # = Putative small encoded peptides (that may play a translational regulatory role)

FIG. 58C

FIG. 59

ValLeuGlyArgGluArgProCysGlyThrAlaOP AM GlyAlaCysGluCysProGly
GTCTTGCTGGCTTAAAGGCCCTGGTACTGCCTGATAAGGGTGGCTTGCAGTCGGCCGG
CAGAACCCAGCGCCTTCGGAACACCATGACGGACTATCCCACGAACGCTCACGGGGCC

*
1 ArgSerArgArgProCysThrMetSerThrAsnProLysProGlnArgLysThrLysArg
61 AGGTCTCTGCTAGAACCGTGCACCATTGAGCACGAAATCCTAAACCTCAAAAGAAAAACCAAAACGT
TCCAGAGCATCTGGCACGCTGGTACTCGTGCCTAGGATTGGAGTTCTTTGGTTGCA

AsnThrAsnArgArgProGlnAspValLysPheProGlyGlyGlnIleValGlyGly
121 AACACCAACCGTGGCTGGCACAGGACGTCAGTTCCGGGTGGCGGTCAAGATCGTTGGTGA
TTGGTTGGCAGCGGGTGTCC'TGCAGTTCAAGGGCCACCGCCAGTCTAGCAACCACCT

ValTyrLeuProArgArgGlyProArgLeuGlyValArgAlaThrArgLysThrSer
181 GTTTACTTGTGCCCCGAGGGGCCCTAAGATTGGGTGTGGCTCAAGTCTGGCTGCTTCTGAAGG
CAAATGAAACAACGGGGCGTCCCGGGATCTAACCCACACGGGGTCCAGTCAGTCTGGCTCCG

overlap with CA290a
241 GluArgSerGlnProArgArgGlnProLysAlaArgArgProGluGly
GAGCGGTGGCTCAGGCCAACCTCGAGGTAGACGTCAGCTAACGGCTCGTGGCCGAGGGC
CTCGCCAGCGTGGAGCTCCATCTGCAGTCGGATAAGGGGTCCAGCAGCCGGCTCCG

ArgThrTrpAlaGlnProGlyTyrProTrpProLeuTyrglyAsnGluGlyCys
301 AGGACCTGGCTCAGGCCGGTACCCCTCTGGCTATGGCAATGAGGGCTGCG
TCCTGGACCCGAGTCGGGCCATGGGAACCGGGAGATACCGTACTTCCCGACGC

* = putative initiator methionine codon

FIG. 60

#ProProOP
#SerThrMetAsnHisSerProValArgAsnTyrCysLeuHisAlaGluSerValAM
#LeuHisGluSerLeuProCysGluGluLeuSerSerArgArgLysArgLysLeuAla
CTCCACCATGAATCACTCCCCCTGTGAGGAUACTACTGTCTTCACGGAGAAAGCGTCTAGCC
GAGGTGGTACTTAGTGAGGGACACTCCTGTGATGACAAGTGCGTCTTCAGATCGG

#MetSerValValGlnProProGlyProLeuProProGlyGluProAM
MetAlaLeuValOP
61 ATGGCGTTAGTATGAGTGTGAGCTGCCACTATGCTGGCTTAACGGACCCCCCTCCGGAGAGGCCATAGT
TACCGCAATCATACTCACAGCACGGTGGAGGTCTGGTGGAGGTCTGGTATCA

121 GGTCTGCGAACCGGTGAGTACACCGGAATTGCCAGGACGGACGCCCTTCTTGGATC
CCAGACGCCCTTGGCCACTATGTTGGCTTAACGGTCTGGCTGGCCAGGAAAGAACCTAG
-----overlap with ag30a-----
#MetProGlyAspLeuGlyValProProGlnAspCysAM
181 AACCCGGCTCAATGGCTGGAGATTGGCGTGGCTGGCAAGAACTGCTAGCCGAGTAGTGT
TGGGGCGAGTTACGGACCTCTAAACCCGACGGGGCGGTTCTGACGATGGCTCATACA

OP AM GlyAlaCysGluCysProGlyArgSer
241 TGGGTGGCGAACGGCCTTGTGGTACTGCCTGATAGGGTGGCTTGGGAGTGGCCGGAGGT
ACCCAGGGCTTTCGGAACACCATGACGGACTATCCCACGAACGCTCACGGGGCCCTCCA

ArgArg
301 CTCGTAGA
GAGGCATCT

* = Start of long HCV ORF
= Putative small encoded peptides (that may
play a translational regulatory role)

FIG. 61

Overlap with 15e

Gly Ala Cys Tyr Ser Ile Glu Pro Pro Leu Asp Leu Pro Pro Leu Ile Gln Arg Leu His Gly
1 GGG CCT GCT ACT CCAT AGA ACC ACT GG AT CT AC CT CC AA AT CA T CAA AG A G C T C C A T G G C
CCCCG GAC GAT GAG GT AT CT T GGT GAC CT AG AT GG AG GT TAG TA AG TT CT GAG GT AAC CG

Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg Val Ala Ala Cys
61 CTC AGG GCAT T T CACT CC AC AGT T ACT CT CC AG GT GA AA ATT A AT AG GT GG CCC GC AT GC
GAG T CCG CGT AA AAG T GAG GT GT CA AT GAG AG GT CC ACT TT AA TT AT CCC ACC CG CG T AC G

Gly*
G

Lew Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp
121 CTC AGA AAA ACT TT GGG GT ACC G CC AT GG CG GG AA AC C G C T C G A AC C T C T G G C C G C T C G C A G G C G
GAG T CTT TT GA ACC CC AT GG CG GG AA AC C G C T C G A AC C T C T G G C C G C T C G C A G G C G

Ala Arg Leu Ile Ala Arg Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp
181 GCT AGG CCT T CT GG CC AG AG GAG G C A G G C A G G C T G C C A T A T G T G C A A G T A C C T C T C A A C T G G
C G A T C C G A A G A C C G G T C T C C G T C C C G A C C G G T A T A C C C G T C A T G G A A G T T G A C C

Ala Val Arg Thr Lys Leu Lys
241 G C A G T A A G A A C C A A A G C T C A A A C
C G T C A T T C T G T T C G A G T T G

* = nucleotide heterogeneity

FIG. 62A

CACTCCACCATGAATCACTCCCCTGTGAGGAACACTGTCTTCACGCAGAAAGCGTCTAG
CCATGGCGTTAGTATGAGTGTGCGTCAGCCTCAGGACCCCCCTCCGGGAGAGCCATA
GTGGTCTGCGGAACCGGTGAGTACACCGGAATTGCCAGGACGACCGGGTCTTCTTGG
TCAACCCGCTCAATGCCCTGGAGATTGGCGTCCCCCGCAAGACTGCTAGCCGAGTAGT
GTTGGGTCGCGAAAGGCCTTGTGGTACTGCCGTAGGGTGCTGCGAGTGCCCCGGGAG-300

---(Putative initiator methionine codon)

GTCTCGTAGACCGTGCACCATGAGCACGAATCTAACCTCAAAAAAAAACAAACGTAA
CACCAACCGTCGCCACAGGACGTCAAGTCCGGGTGGCGGTAGATCGTTGGTGGAGT
TTACTTGTGCGCGCAGGGGCCCTAGATTGGGTGTGCGCGCAGGAGAAAGACTCCGA
GCGGTGCGAACCTCGAGGTAGACGTCAAGCCTATCCCCAAGGCTCGTGGCCCGAGGGCAG
GACCTGGGCTCAGCCCAGGGTACCCCTGGCCCTCTATGGCAATGAGGGCTGCGGGTGGC-600
GGGATGGCTCCTGTCCTCCCGTGGCTCTGGCCTAGCTGGGGGCCACAGAACCCCCGGCG
TAGGTCGCGCAATTGGTAAGGTATCGATACCCCTAACGTGCGGCTTCGCCGACCTCAT
GGGGTACATACCGCTCGTCGGCGCCCTCTTGGAGGGCGTGCCAGGGCCCTGGCGCATGG
CGTCCGGGTTCTGGAAGACGGCGTGAACATATGCAACAGGGAACCTCTGGTTGCTCTT
CTCTATCTCCTCTGGCCCTGCTCTTGCTACTGTGCCCCTCGGCCCTACCAAGT-900
GCGCAACTCCACGGGGCTTACACGTACCAATGATTGCCCTAACTCGAGTATTGTGTA
CGAGGCGGCCGATGCCATCCTGCAACACTCCGGGTGCGTCCCTTGCCTGAGGGCAA
CGCCTCGAGGTGTTGGTGGCGATGACCCCTACGGTGGCCACCAGGGATGGCAAACCTCC
CGCGACGCGCAGCTCGACGTACATCGATCTGCTTGTGCGGAGCGGCCACCCCTGTTCGGC
CCTCTACGTGGGGACCTATGCGGCTCTGTCTTCTTGTGCGCCAACGTGTTCACCTCTC-1200
TCCCAGGCGCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCCAGGCCATATAAC
GGGTCACCGCATGGCATGGGATATGATGATGAACTGGTCCCTACGACGGCGTTGGTAAT
GGCTCAGCTGCTCCGGATCCACAAGGCATCTTGGACATGATCGCTGGTGCCTACTGGGG
AGTCCTGGCGGGCATAGCGTATTCTCATGGTGGGGAACTGGGCGAAGGTCCTGGTAGT
GCTGCTGCTATTGCCGGCTGACGCGGAAACCCACGTACCGGGGGAAAGTGCCGGCCA-1500
CACTGTGCTGGATTGTTAGCCTCCTGCAACAGGCCCTGAACTGCAATGATAGCCTCAA
CAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACTTCAACTCTCAGGCTGCTGA
CACCGGCTGGTTGGCAGGGCTTCTATCACCAAGTTCAACTCTCAGGCTGCTGA
GAGGCTAGGCCAGCTGCCGACCCCTACCGATTITGACCAAGGGCTGGGCCCTATCAGTTA
TGCCAACGGAAGCGGCCCGACCGCGCCCTACTGCTGGCACTACCCCCCAAAACCTTG-1800
CGGTATTGTGCCCAGCAAGAGTGTGTTGGTCCGGTATATTGCTTCACTCCCAGCCCCGT
GGTGGTGGGAACGACCGACAGGTGGCGCCACCTACAGCTGGGGTAAAATGATAC
GGACGTCTCGTCCTTAACAATACCAAGGCCACCGCTGGCAATTGGTTCGGTTGACCTG
GATGAACACTGAGATTACCAAAAGTGTGCGGAGCGCCCTTGTGTCATGGAGGGC
GGGCAACACACCCCTGCACTGCCCACTGATTGCTTCCGCAAGCATCCGGACGCCACATA-2100
CTCTCGGTGCGGCCCTGGATCACACCCAGGTGCTGGTCAACTACCGTATAG
GCTTTGGCATTATCTTGTAACCATCAACTACACCATATTAAAATCAGGATGTAAGTGGG
AGGGGTGAAACACAGGCTGGAGCTGCGCTGCAACTGGACGCGGGCGAACGTTGCGATCT
GGAAGACAGGGACAGGTCCGAGCTCAGCCGTTACTGCTGACCACTACACAGTGGCAGGT
CCTCCCGTGTCTCCTCACACCCCTACCAAGCCTGGTCCACCGGCTCATCCACCTCCACCA-2400
GAACATTGGACGTGCAAGTACTTGTACGGGGTGGGTCAGCATCGCGTCTGGCCAT
TAACTGGGAGTACGTGCTTCTCTGTTCTGCTGCAAGCAGCGCGCTGTGCTCCTG
CTTGTGGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTGGAGAACCTCGTAATACT
TAATGCGACATCCCTGGCGGGACGACGGTCTTGTGTTCTGCTTCTGCTTCTGCTT
TGCGATGGTATTGAAGGTAAGTGGGTGCCCAGCGGTCTACACCTCTACGGGATGTG-2700
GCCTCTCCTCCTGCTCCTGTTGGCGTTGCCCAAGCGGGCGTACCGCGTGGACACGGAGGT
GGCGCGTCGTGTGGCGGTGTTGTTCTGCTGGGTTGATGGCGCTGACTCTGTCACCCATA
TTACAAGCGCTATATCAGCTGGTCTGTTGCTGAGTACCGTCAACGCTCGAGGGGGCGCAGC
AGCGCAACTGCACGTGGATTCCCCCCTCAACGCTCGAGGGGGCGCAGC
CTTACTCATGTGCTGTACACCGACTCTGGTATTGACATCACCAAATTGCTGCTGGC-3000
CGTCTTGGACCCCTTGGATTCTCAAGCCAGTTGCTTAAAGTACCCCTACTTGTGCG
CGTCCAAGGCCTTCTCGGTTCTGCGCGTTAGCGCGGAAGATGATGGAGGGCATTACGT
GCAAATGGTCATCATTAAAGTTAGGGCGCTACTGGCACCTATGTTATAACCATCTCAC
TCCTCTTGGGACTGGCGCACAAACGGCTTGCAGAGATCTGGCGTGGCTGTAGAGCCAGT
CGTCTTCTCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATACCGCCGCGTGC-3300
TGACATCATCAACGGCTTGCCTGTTCCGCCGCAGGGGGCGGGAGATACTGCTCGGCC
AGCCGATGGAATGGTCTCAAGGGGTGGAGGTTGCTGGCGCCCATCACGGCGTACGCCA
GCAGACAAGGGGCCTCTAGGGTGCATAATCACCAAGCCTAACGGCCGGGACAAAAACCA
AGTGGAGGGTGGAGGTCAGATTGTGTCAGTGTGCTGCCAACCTTCTGGCAACGTGCAT

FIG. 62B

CAATGGGGTGTGCTGGACTGTCTACCACGGGGCCGGAACGAGGACCATCGCGTCACCAA-3600
GGGTCTGTCACTCAGATGTATACCAATGTAGACCAAGACCTTGTGGCTGGCCGCTCC
GCAAGGTAGCCGCTCATTGACACCCCTGCACTTGCAGGCTCCTCGGACCTTACCTGGTCAC
GAGGCACGCCGATGTCATTCCCGTGCAGCGGGGGGTGATAGCAGGGGCAGCCTGCTGTC
GCCCGGCCCATTCTACTTGAAAGCTCCTCGGGGGTCCCGTGTGTCGCCCCGGGG
GCACGCCGTGGCATATTAGGGCCGCGGTGTCACCCGTGGAGTGGCTAAGGCGGTGGA-3900
CTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTC
CTCTCCACCACTAGTAGTGCCCCAGAGCTTCAGGTGGCTCACCTCCATGCTCCCACAGGCAG
CGGCAAAAGCACCAAGGTCCCGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACT
CAACCCCTCTGTTGCTGCAACACTGGCTTGGTGTACATGTCACAGGCTATGGGAT
CGATCCTAACATCAGGACCGGGGTGAGAACAAATTACCAACTGGCAGCCCACACGTACTC-4200
CACCTACGGCAAGTCCCTGCCGACGGCGGGTGCTCGGGGGCGCTTATGACATAATAAT
TTGTGACGAGTGCACCTCCACGGATGCCACATCCATCTGGCATCGGCACTGTCTTGA
CCAAGCAGAGACTGCGGGGGCGAGACTGGTTGCTCGCCACCGCCACCCCTCCGGGCTC
CGTCACTGTGCCCATCCCACATCGAGGAGGGTTGCTCTGTCCACCGGAGAGATCCC
TTTTACGGCAAGGCATCCCCCTCGAACAGTAATCAAGGGGGGAGACATCTCATCTTG-4500
TCATTCAAAGAAGAACGTGCGACGAACCTGCCGAAAGCTGGTCGATTGGCATCAATGC
CGTGGCCTACTACCGCGGTCTTGACGTGTCGTCATCCGACCGAGCGCGATGTTGTCGT
CGTGGCAACCGATGCCCTCATGACCGGCTATACCGGCGACTCGACTCGGTGATAGACTG
CAATACGTGTGTCACCCAGACAGTCGATTCAAGCCTTGACCCCTACCTCACCAATTGAGAC
AATCACGCTCCCCCAGGATGCTGTCTCCGACTCAACGTCGGGCAGGACTGGCAGGGG-4800
GAAGCCAGGCATCTACAGATTGTGGCACCGGGGAGCGCCCTCCGGCATGTTGACTC
GTCGTCCTCTGTGAGTGTATGACGCGAGCTGTGCTTGGTATGAGCTACGCCGCCGA
GACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGCTTCCGTGTGCCAGGACCA
TCTTGAATTGGGAGGGCGCTTACAGGCCACTCATATAGATGCCACTTCTATC
CCAGACAAAGCAGAGTGGGGAGAACCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTG-5100
CGCTAGGGCTCAAGCCCCCTCCCCCATCGTGGGACCGAGATGTGGAAAGTGTGATTGCGCT
CAAGCCCCACCCCTCCATGGGCAACACCCCTGCTATACAGACTGGCGCTGTTCAGAATGA
AATCACCCCTGACGCAACCCAGTCACCAAAATACATCATGACATGCGATGTCGGCGACCTGG
GGTCGTACGAGCACCTGGGTGCTCGTTGGCGCGTCTGGCTGCTTGGCGCGTATTG
CCTGTCAACAGGCTGCGTGGTCACTGGGAGAGTTGCTGATGAGATGGAAGAGTGTCTCAGCA-5400
CATACCTGACAGGGAAAGTCCTCTACCGAGAGTTGCTGATGAGATGGAAGAGTGTCTCAGCA
CTTACCGTACATCGAGCAAGGGATGATGCTGCCGAGCAGTTCAAGCAGAACGGCCCTCGG
CCTCCTGCAAGCCGCGTCCCGTCAGGCAGAGGGTATCGCCCTGCTGTCAGACCAACTG
GCAAAAACCTGAGACCTTCTGGGCGAACATATGTGGAACTTCATCAGTGGGATACAATA
CTTGGCGGGCTTGTCAACGCTGCCGTGTAACCCGCCATTGCTTCAATTGATGGCTTTAC-5700
AGCTGCTGTCAACAGGCCACTAACCTAGCCAAACCCCTCTTCACATATTGGGGGG
GTGGGTGGCTGCCAGCTGCCGCCCCCGGTGCCGCTACTGCCTTGTGGCGCTGGCTT
AGCTGGCGCCGCCATCGGCAGTGTGGACTGGGAAGGTCCTCATAGACATCCTGCAAG
GTATGGCGGGGGCTGGCGGGAGCTTGTGGCATTCAGATCATGAGCGGTGAGGTCCC
CTCCACGGAGGGACCTGGTCAATCTACTGCCGCCATCCCTCGCCGGAGGCCCTCGTAGT-6000
CGGCCTGGCTGTGCAAGCAACTGCGCCGGCACGTTGCCCGGGCGAGGGGGCAGTGCA
GTGGATGAAACCGGCTGATAGCCTCGCCTCCGGGGGAAACCATGTTCCCCCACGCACCA
CGTGCCTGGAGAGCGATGCACTGCCATACTCAGCAGCCTCACTGTAAC
CCAGCTCCTGAGGGGACTGCACCAAGTGGATAAGCTGGAGTGTACCAACTCATGCTCCGG
TTCCTGGCTAAGGGACATCTGGACTGGATATGCGAGGTGTTGAGCGACTTAAAGACCTG-6300

FIG. 62C

GCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGATCCCTTGTGTCCTGCCAGCGCG
GTATAAGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGA
GATCACTGGACATGTCAAAACGGGACGATGAGGATCGTCGGCTTAGGACCTGCAGGAA
CATGTGGAGTGGGACCTTCCCCATTAAATGCCATACACCACGGGCCCTGTACCCCCCTTCC
TGCGCCGAACTAACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAG-6600
GCAGGTGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCGTG
CCAGGTCCCCTGCCGAATTTCACAGAATTGGACGGGTGCGCTACATAGGTTTGC
GCCCTCTGCAAGCCCTGCTGCCGGAGGTATCATTAGAGTAGGACTCCACGAATA
CCCGTAGGGTCGCAATTACCTTGCAGGCCAACGGACGTGGCGTGTGACGTCCAT
GCTCACTGATCCCTCCATATAACAGCAGAGGCCGGCGAACGGTTGGCGAGGGATC-6900
ACCCCCCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTAAGGCAAC
TTGCACCGCTAACCATGACTCCCTGATGCTGAGCTCATAGAGGCCAACCTCTATGGAG
GCAGGAGATGGCGGCAACATCACCAAGGGTTGAGTCAGAAAACAAAGTGGTATTCTGGA
CTCCTCGATCCGCTTGTGGCGAGGAGGACGAGCGGGAGATCTCCGTACCCGAGAAAT
CCTGCGGAAGTCTGGAGATTGCCCCAGGCCCTGCCGTTGGCGCGGCCGGACTATAA-7200
CCCCCGCTAGTGGAGACGTGGAAAAAGCCGACTACGAACCAACCTGTGGTCCATGGCTG
TCCGCTTCCACCTCCAAAGTCCCTCCTGTGCCCTCGGAAGAACGGGACGGTGG
CCTCACTGAATCAACCTATCTACTGCCCTGGCGAGCTGCCACAGAACGCTTGGCAG
CTCCTCAACTCCGCATTACGGGCAGAACATAGACAACATCCTCTGAGGCCGCCCTTC
TGGCTGCCCCCCCGACTCCGACGCTGAGCTCATTCCTCATGCCCTGGAGGGGGA-7500
GCCTGGGGATCCGGATCTTAGCAGCGGTATGGTCAACGGTCAGTAGTGAGGCCAACGC
GGAGGATGTCGTGTGCTCAATGTCTTACTCTTGGACAGGCGACTCGTCACCCGTG
CGCCGCGGAAGAACAGAAACTGCCATCAATGCACTAACGCAACTCGTGTACGTACCA
CAATTGGTGTATTCCACCACTCACGCAGTGCTTGCCAAAGGCAAGAACAGAACATT
TGACAGACTGCAAGTTCTGGACAGCATTACCAAGGACGTACTCAAGGAGGTTAACGCAGC-7800
GGCGTAAAAGTGAAGGCTAACTTGCTATCCGTAGAGGAAGCTTGCAAGCCTGACGCC
ACACTCAGCCAATCCAAGTTGGTTATGGGCAAAAGACGTCCGTTGCCATGCCAGAAA
GGCGTAAACCCACATCAACTCCGTGTGGAAAGACCTTCTGGAAAGACAATGTAACACCAAT
AGACACTACCACATGGCTAAGAACGAGGTTTCTGCGTTAGCCTGAGAACGGGGGTG
TAAGCCAGCTCGTCATCGTGTCCCCGATCTGGCGTGCCTGCGAAAGAACATGGC-8100
TTTGTACGACGTGGTTACAAAGCTCCCTTGGCGTGTGGAAAGCTTACGGATTCCA
ATACTCACCAAGGACAGCGGGTTGAATTCTCGTGCAGCGTGGAAAGTCCAAGAAAACCC
AATGGGGTTCTCGTATGATAACCGCTGTTGACTCCACAGTCACTGAGAGCGACATCCG
TACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGGCCGCTGGCCATCAA
GTCCTCACCGAGAGGGCTTATGTTGGGGCCCTTACCAATTCAAGGGGGAGAACCTG-8400
CGGCTATCGCAGGTGCCCGCGAGCGCGTACTGACAACTAGCTGTGGTAACACCCCTCAC
TTGCTACATCAAGGCCCGGGCAGCCTGTCGAGCCGCAAGGGCTCCAGGACTGCACCATGCT
CGTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGCTCCAGGAGGACGCC
GAGCCTGAGAGCCTCACGGAGGCTATGACCAAGGTACTCCGCCCTGGGACCCCC
ACAACCAGAACATGACTTGGAGCTACAAACATCATGCTCTCCAAACGTGTCAGTCGCCA-8700
CGACGGCGCTGGAAAGAGGGTCTACTACCTCACCGTGACCCCTACAACCCCCCTCGCGAG
AGCTGCGTGGGAGACAGCAAGAACACACTCCAGTCATTCTGGCTAGGCAACATAATCAT
GTTTGCCTTACACTGTGGCGAGGATGATACTGATGACCCATTCTTTAGCGTCCTTAT
AGCCAGGGGACCGAGCTGAACAGGCCCTCGATTGCGAGATCTACGGGGCCTGCTACTCCAT
AGAACCACTTGATCTACCTCAATCATTCAAAAGACTCCATGGCCTCAGCGCATTTCAGT-9000
CCACAGTTACTCTCAGGTGAAATTAAATAGGGTGGCCGATGCCCTCAGAAAACCTGGG
ACCGCCCTTGCAGCTGGAGACACCGGGCCGGAGCGTCCCGCGTAGGCTTCTGGCCAG
AGGAGGGCAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGCAGTAAGAACAAAGCT
CAAAC

FIG. 62D

1 CACTCCACCATGAATCACTCCCCTGTGAGGAACACTGTCTTCAGCAGAAAGCGTCTAG
GTGAGGTGGTACTTAGTGAGGGACACTCCTGATGACAGAAGTGCCTTTCGCAGATC
61 CCATGGCGTTAGTATGAGTGTGCGCAGCCTCCAGGACCCCCCTCCCGGGAGAGCCATA
GGTACCGCAATCATACTCACAGCACGTCGGAGGTCTGGGGGGAGGGCCCTCTCGGTAT
121 GTGGTCTGCGAACCGGTGAGTACACCGGAATTGCCAGGACGACCGGGTCCTTCTTGA
CACCAAGACGCCTGGCCACTCATGTGGCCTTAACGGTCTGCTGGCCAGGAAAGAACCT
181 TCAACCCGCTCAATGCCTGGAGATTGGCGTGCACGGCAAGACTGCTAGCCGAGTAGT
AGTTGGCGAGTTACGGACCTCTAAACCCGACGGGGCGTTCTGACGATCGGCTCATCA
241 GTTGGGTGCGAACAGGCCTTGTGGTACTGCCTGATAGGGTGCAGTGCCCCGGAG
CAACCCAGCGCTTCCGGAACACCATGACGGACTATCCCACGAACGCTCACGGGGCCCTC
301 GTCTCGTAGACCGTGACCATGAGCACGAATCTAAACCTAAAAAAAAACAAACGTAA
CAGAGCATCTGGCACGTGGTACTCGTGCCTAGGATTGGAGTTTTTTTGTGCTTGCATT
361 CACCAACCGTCGCCAACAGGACGTCAGTTCCGGGTGGCGGTAGATCCTGGTGGAGT
GTGGTGGCAGCGGGTGTCTGCAGTTCAAGGGCCCACCGCCAGTCTAGCAACCACCTCA
421 TTACTTGTGCGCGCAGGGGCCCTAGATTGGGTGTGCGCGCAGCAGAAAAGACTTCCGA
AATGAACAACGGCGCGTCCCCGGGATCTAACCCACACGCGCGTCTCTTGAAGGCT
481 GCGGTGCGAACCTCGAGGTAGACGTCAGCCTATCCCCAAGGCTGTCGGCCCAGGGCAG
CGCCAGCGTTGGAGCTCCATCTGCAGTCGGATAGGGTTCGAGCAGCCGGCTCCGTC
541 GACCTGGGCTCAGCCGGTACCCCTGGCCCCCTATGGCAATGAGGGCTGCGGGTGGC
CTGGACCCGAGTCGGGCCATGGGAACCGGGGAGATAACGTTACTCCGACGCCACCCG
601 GGGATGGCTCCTGTCTCCCCTGGCTCTCGGCCAGCTGGGGCCCCACAGACCCCCGGCG
CCCTACCGAGGACAGAGGGCACCGAGAGCCGGATCGACCCGGGTGTCTGGGGCCGC
661 TAGGTGCGCGCAATTGGTAAGGTATCGATACCCCTACGTGCGGCTTCGCCGACCTCAT
ATCCAGCGCGTAAACCCATTCCAGTAGCTATGGGAATGCACGCCAAGCGGCTGGAGTA
721 GGGGTACATACCGCTCGTCGGGCCCTTGGAGGCCTGCCAGGGCCCTGGCGCATGG
CCCCATGTATGGCGAGCAGCCGCGGGAGAACCTCCGCGACGGTCCGGGACCGCGTACC
781 CGTCCGGGTTCTGGAAGACGGCGTGAACATATGCAACAGGGAACCTTCTGGTTGCTCTT
GCAGGCCAAGACCTTCTGCCGCACTTGATACGTTGCTCCCTGGAAAGGACCAACGAGAAA
841 CTCTATCTTCTCTGGCCCTGCTCTTGTACTGTGCCCCTCGGCCTACCAAGT
GAGATAGAAGGAAGACCGGGACGAGAGAACGAACTGACACGGCGAAGCGGATGGTTCA
901 GCGCAACTCCACGGGGCTTACCAACGTCACCAATGATTGCCCTACTCGAGTATTGTGA
CGCGTTGAGGTGCCCGAAATGGTGCACTGGTTACTAACGGGATTGAGCTATAACACAT
961 CGAGGGCGCCGATGCCATCCTGCACACTCCGGGGTGCCTCCCTGCCGTTGAGGGCAA
GCTCCGCCGGCTACGGTAGGACGTTGAGGCCACCGCAGGGAACGCAAGCAACTCCGTT
1021 CGCCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAAGGGATGGCAAACCTCC
GCGGAGCTCCACAACCCACCGCTACTGGGGATGCCACCGGTGGTCCCTACCGTTGAGGG
1081 CGCGACGCAGCTCGACGTACATCGATCTGCTGTCGGAGCGCCACCCCTGTTCCG
GCGCTGCGTCGAAGCTGCAGTGTAGCTAGACGAACAGCCCTCGCGGTGGAGACAGCCG
1141 CCTCTACGTGGGGGACCTATGCGGGCTGTCTTCTTGTCGGCCAACGTGTTCACCTCTC
GGAGATGCACCCCTGGATACGCCAGACAGAAAGAACAGCCGGTIGACAAGTGGAAAGAG
1201 TCCCAGGGGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCGGCCATATAAC
AGGGTCCGCGGTGACCTGCTGCGTTCAACGTTAACGAGATAGATAGGGCCGGTATATTG
1261 GGGTCACCGCATGGCATGGATATGATGAACTGGTCCCCCTACGACGGCGTTGGTAAT

FIG. 62E

1321 GGCTCAGCTGCTCCGGATCCCACAAGCCATCTTGGACATGATCGCTGGTGCCTCACTGGGG
CCGAGTCGACGAGGCCTAGGGTGTTCGGTAGAACCTGTACTAGCGACCACGAGTGACCCC
1381 AGTCCTGGCGGGCATAGCGTATTTCTCCATGGTGGGAACTGGGCGAAGGTCTGGTAGT
TCAGGACCGCCCCGTATCGATAAAAGAGGTACCAACCCCTTGACCCGCTTCAGGACCATCA
1441 GCTGCTGCTATTGCCGGCGTCAGCGGAAACCCACGTCACCGGGGGAAGTGCCGGCA
CGACGACGATAAACGGCCGAGCTGCGCCTTGGGTGAGTGGCCCCCTCACGGCCGGT
1501 CACTGTGTCTGGATTGTTAGCCTCCTCGCACCAAGGCGCCAAGCAGAACGTCCAGCTGAT
GTGACACAGACCTAAACAATCGGAGGAGCGTGGTCCGGGTTCTGCAAGGTGACTA
1561 CAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACGTCAATGATAGCCTCAA
GTTGTGGTTGCCGTCAACCGTGGAGTTATCGTGCCTGGACTTGACGTTACTATCGGAGTT
1621 CACCGGCTGGTTGGCAGGGCTTTCTATCACCAAGTTCAACTCTTCAGGCTGTCCCTGA
GTGGCCGACCAACCGTCCCAGAAAGATAGTGGTGTCAAGTTGAGAAGTCCGACAGGACT
1681 GAGGCTAGCCAGCTGCCGACCCCTTACCGATTTGACCAAGGGCTGGGGCCCTATCAGTTA
CTCCGATCGGTGACGGCTGGGAATGGCTAAAACGTTCCGACCCCGGGATAGTCAT
1741 TGCCAACGGAAGCGGCCCGACCAGCGCCCTACTGCTGGCACTACCCCCCAGACCTTG
ACGGTTGCCCTCGCCGGGGCTGGTCGCGGGGATGACGACCGTGTGGGGGGTTTGGAAC
1801 CGGTATTGTGCCCGCGAAGAGTGTGTGGTCCGGTATATTGCTTCACTCCAGCCCGT
GCCATAACACGGCGCTTCTCACACACACCAGGCCATATAACGAAGTGTGGGGTCGGGCA
1861 GGTGGTGGGAACGACCGACAGGTGGCGCGCCACCTACAGCTGGGTGAAATGATAC
CCACCAACCTTGCTGGCTGTCCAGCCCCGGGGTGGATGTCGACCCACTTTACTATG
1921 GGACGTCTCGCTTAACAATACCAAGGCCACCGCTGGCAATTGGTCTGGTTGACCTG
CCTGCAGAACGAGGAATTGTTATGGTCCGGTGGGACCCGTTAACCAAGCCAACATGGAC
1981 GATGAACACTGATTACCAAAAGTGTGCGGAGCGCCTCCTGTGTACGGAGGGC
CTACTTGAGTTGACCTAACGTTACAGTGGTTCACACGCCCTCGCGGAGGAACACAGTAGCCTCCCCG
2041 GGGCAACAAACACCCCTGCACTGCCCACTGATTGCTTCCGCAAGCATCCGGACGCCACATA
CCGTTGTTGGACGTGACGGGGTACAAACGAAGGCCCTGAGGGCAT
2101 CTCTCGGTGCCGCTCCGGTCCCTGGATCACACCCAGGTGCCTGGTCGACTACCCGTATAG
GAGAGCCACGCCAGGGACCTAGTGTGGTCCACCGACAGCTGATGGGATATC
2161 GCTTGGCATTATCCTGTACCATCAACTACACCATATTTAAATCAGGATGTACGTGGG
CGAAACCGTAATAGGAACATGGTAGTTGATGTGGTATAAATTTAGTCCTACATGCACCC
2221 AGGGGTCGAACACAGGCTGGAGCTGCCGCAACTGGACGCCGGGCAACGTTGCGATCT
TCCCCAGCTGTGTCGACCTCGACGGACGTTGACCTGCGCCCCGTTGCAACGCTAGA
2281 GGAAGACAGGGACAGGTCCGAGCTCAGCCGTTACTGCTGACCAACTACACAGTGGCAGGT
CCTTCTGCTCCGTCCAGGCTCGAGTCGGGCAATGACGACTGGTATGTGTCACCGTCCA
2341 CCTCCCGTCTTCAACAACCCCTACCAAGCCTGTCCACCGGCTCATCCACCTCCACCA
GGAGGGCACAAGGAAGTGTGGGATGGTCGGAACAGGTGGCCGGAGTAGGTGGAGGTGGT
2401 GAACATTGTGGACGTGCACTTGTACGGGGTGGGTCAAGCATCGCTCTGGCCAT
CTTGTAAACACCTGACGTATGAACATGCCACCCAGTTGTAGCGCAGGACCCGGTA
2461 TAAGTGGGAGTACGTGTTCTCCTGTTCTGTGCAAGACGCGCGCGTCTGCTCCTG
ATTCAACCTCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCGCGCAGACGAGGAC
2521 CTTGTGGATGATGCTACTCATATCCAAGCGGGAGGCGGCTTGGAGAACCTCGTAATACT
GAACACCTACTACGATGAGTATAGGGTTGCCCTCGCCGAAACCTTGGAGCATTATGA
2581 TAATGCAGCATCCCTGGCCGGACGCACGGTCTGTATCCTCCTCGTGTCTCTGCTT

FIG. 62F

2641 TGCATGGTATTGAAGGGTAAGTGCGGTCGCCCGGAGCGGTCTACACCTTACGGGATGTG
ACGTACCATAAACTTCCCATTCAACCACGGGCCTGCCAGATGTGGAAGATGCCCTACAC
2701 GCCTCCTCCTGCTCCTGTTGGCGTTGCCCGAGCGGGCGTACGCGCTGGACACGGAGGT
CGGAGAGGAGGACGAGGACAACCGCAACGGGTCGCCGCATGCGCACCTGTGCCTCCA
2761 GGCCGCGTCGTGTGGCGGTGTTCTCGTCGGTTGATGGCGCTGACTCTGTACCCATA
CCGGCGCAGCACCCGACAACAAGAGCAGCCAACTACCGCAGACTGAGACAGTGGTAT
2821 TTACAAGCGCTATATCAGCTGGTGCTTGTGGCTTCACTTGTGACCATACCCAGAGTGG
AATGTTCGCGATATAGTCGACCAACACCACCGAAGTCATAAAAGACTGGTCTCACCT
2881 AGCGCAACTGCACGTGTGGATTCCCCCCTCAACGTCCGAGGGGGCGCGACGCCGTCA
TCGCGTTGACGTGACACCTAACGGGGAGTTGCAAGGCTCCCCCGCGCTGCCAGTA
2941 CTTACTCATGTGTGCTGTACACCCACTCTGGTATTTGACATCACCAAATTGCTGCTGGC
GAATGAGTACACACGACATGTGGCTGAGACCATAACTGTAGTGGTTAACGACGACCG
3001 CGTCTCGGACCCCTTGGATTCTCAAGCCAGTTGCTTAAAGTACCCACTTTGTGCG
GCAGAAGCCTGGGAAACCTAACAGAGTTCGGTAAACGAATTCTATGGGATGAAACACGC
3061 CGTCCAAGGCCTTCTCGGTTCTGCGCGTAGCGCGGAAGATGATCGGAGGCCATTACGT
GCAGGTTCCCGGAAGAGGCCAACGCGCAATCGCGCCTACTAGCCTCCGTAATGCA
3121 GCAAATGGTCATCATTAAGTTAGGGCGCTACTGGCACCTATGTTATAACCACATCTCAC
CGTTTACCACTAGTAATTCAATCCCCCGAATGACCGTGGATACAAATATTGGTAGAGTG
3181 TCCTCTCGGGACTGGCGCACAACGGCTTGCAGATCTGGCCGTGGCTGTAGAGCCAGT
AGGAGAAGCCCTGACCCCGGTGTTGCCAACGCTCTAGACCGGACCGACATCTCGGTCA
3241 CGTCTCTCCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATACCGCCGCGTGC
GCAGAAGAGGGTTTACCTCTGGTTGAGTAGTGCACCCCCCGTCTATGGCGGCGCACGCC
3301 TGACATCATCAACGGCTTGCCTGTTCCGCCCGCAGGGCCGGAGATACTGCTCGGGC
ACTGTAGTAGTTGCCAACGGACAAAGGCGGGCGTCCCCGGCCCTATGACGAGCCCG
3361 AGCCGATGGAATGGTCTCAAGGGGTGGAGGTTGCTGGCGCCCATCACGGCGTACGCCA
TCGGCTACCTTACCAAGAGGTTCCCCACCTCCAACGACCCGGGGTAGTGCCGATGCCGGT
3421 GCAGACAAGGGGCCTCTAGGGTGATAATCACCAAGCTAACTGGCCGGGACAAAAACCA
CGTCTGTTCCCCGGAGGATCCCACGTATTAGTGGTCGGATTGACCGGCCCTGTTTGGT
3481 AGTGGAGGGTGGACTGTCAACTGCTGCCAACCTCCTGGCAACGTGCAT
TCACCTCCACTCCAGGTCTAACACAGTTGACGACGGGTTGGAAGGACCGTTGACGTA
3541 CAATGGGGTGTGCTGGACTGTCTACCACGGGGCGGAACGAGGACCATCGCGTACCCAA
GTTACCCACACGACCTGACAGATGGTCCCCGGCTTGCTCTGGTAGGCCAGTGGTT
3601 GGGTCTGTCACTCCAGATGTATACCAATGTAGACCAAGACCTTGTGGCTGGCCGCTCC
CCCAGGACAGTAGGTCTACATATGGTTACATCTGGTTCTGGAAACACCGACCGGGCGAGG
3661 GCAAGGTAGCCGCTATTGACACCCCTGCACTGCGGCTCCTCGGACCTTACCTGGTCAC
GCTTCATCGGCCAGTAACCTGACGGGACGTGAACGCCGAGGAGCCTGGAAATGGACAGTG
3721 GAGGCACGCCGATGTCACTCCGTGCGCCGGCGGGGTGATAGCAGGGGAGCCTGCTGTC
CTCGTGCCTACAGTAAGGGCACGCCGCCCCACTATCGTCCCCGTGGACGACAG
3781 GCCCCGGCCCATTCCTACTTGAAAGGCTCCTCGGGGGTCCGCTGTTGCCCCGGGG
CGGGGGGGTAAAGGATGAACCTTCCGAGGAGCCCCCAGGCAGAACACGGGGCGCC
3841 GCACGCCGTGGGCATATTAGGGCCGCGGTGTCACCGCTGGAGTGGCTAAGGCCGG
CGTGCAGGCCACCGTATAAAATCCCGGCCACACGTGGCACCTCACCGATTCCGCCACCT
3901 CTTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTTCACGGATAACTC

FIG. 62G

3961 CTCTCCACCAAGTAGTGCCTCAGAGCTTCAGGTGGCTCACCTCATGCTCCCACAGGCAG
GAGAGGTGGTCATCACGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGTC
4021 CGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACT
GCCGTTTCGTGGTCCAGGGCCGACGTATACTCGAGTCCCATAATTCCACGATCATGA
4081 CAACCCCTCTGTTGCTGCAACACTGGGCTTGGTCTTACATGTCCAAGGCTATGGGAT
GTTGGGAGACAACGACGTTGTGACCGAAACCACGAATGTACAGGTTCCGAGTACCCCTA
4141 CGATCCTAACATCAGGACCGGGGTGAGAACAAATTACCACTGGCAGCCCCATACGTACTC
GCTAGGATTGTAGTCCTGCCACTCTGTTAATGGTGACCGTCGGGTAGTGCATGAG
4201 CACCTACGGCAAGTTCTTGCGACGGCGGGTGCTCGGGGGCGCTTATGACATAATAAT
GTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCGAATACTGTATTATTA
4261 TTGTGACGAGTGCACGGATGCCACATCCATCTTGGGCATCGGCACGTGCCTGA
AACACTGCTCACGGTGAGGTGCCTACGGTAGGTAGAACCCGTAGCCGTACAGGAAC
4321 CCAAGCAGAGACTGCAGGGGGCGAGACTGGTTGTGCTGCCACCGCCACCCCTCCGGGCTC
GGTCGTCTCTGACGCCCGCTCTGACCAAACACGAGCGGTGGCGGTGGGGAGGCCGAG
4381 CGTCACTGTGCCCATCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCC
GCAGTGACACGGGGTAGGGTTGAGCTCCTCAACGAGACAGGTGGTGGCCTCTAGGG
4441 TTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCTCATCTTCTG
AAAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTCCCCCTCTGTAGAGTAGAAC
4501 TCATTCAAAGAAGAAGTGCAGCAACTCGCCGAAAGCTGGTCGCATTGGGCATCAATGC
AGTAAGTTCTTCTTCACGCTGCTTGAGCGGGCTTCGACCAGCGTAACCCGTAGTTACG
4561 CGTGGCCTACTACCGCGGTCTTGACGTGTCCTCATCCCACCGAGCGGCATGTTGCGT
GCACCGGATGATGGCGCCAGAACTGCACAGGAGTAGGGCTGGTCGCCGCTACAACAGCA
4621 CGTGGCAACCAGATGCCCTCATGACCGGCTATACCGGCACCTCGACTCGGTGATAGACTG
GCACCGTTGGCTACGGGAGTACTGGCGATATGGCGCTGAAGCTGAGCCACTATCTGAC
4681 CAATACGTGTGTCACCCAGACAGTCGATTTCAGCCTGACCCCTACCTTACCAATTGAGAC
GTTATGCACACAGTGGGCTGTCAGCTAAAGTCGGAACGGGGATGGAAGTGGTAACCTCTG
4741 AATCACGCTCCCCCAGGATGCTGTCCTCGACTCAACGTGGGGCAGGACTGGCAGGGG
TTAGTGCAGGGGGTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCCTGACCGTCCCC
4801 GAAGCCAGGCATCTACAGATTTGTGGCACCGGGGGAGCGCCCTCCGGCATGTTGACTC
CTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGCCGTACAAGCTGAG
4861 GTCCGTCCCTGTGAGTGTATGACCGCAGGCTGTGCTTGGTATGAGCTACGCCGCCGA
CAGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCAACTCGAGTGCAGGGCGCT
4921 GACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGGCTTCCGTGTGCCAGGACCA
CTGATGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACACGGTCTGGT
4981 TCTTGAATTTGGGAGGGCGTCTTACAGGCCTCACTCATATAGATGCCACTTTCTATC
AGAACTTAAACCCCTCCGAGAAATGTCCGGAGTGAAGTATATCTACGGGTGAAAGATAG
5041 CCAGACAAAGCAGAGTGGGGAGAACCTTCCCTACCTGGTAGCGTACCAAGCCACCGTGTG
GGTCTGTTCGTCTCACCCCTTGGAGGAATGGACCATCGCATGGTGGCGACAC
5101 CGCTAGGGCTCAAGCCCCCTCCCCCATCGTGGGACCAGATGTGGAAGTGTGTTGATTGCT
GCGATCCGAGTTGGGGAGGGTAGCACCTGGTCTACACCTTACAAACTAAGCGGA
5161 CAAGCCCACCCCTCCATGGGCAACACCCCTGCTATACAGACTGGGCCTGTTGAGAATGA
GTTGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCCGACAAGTCTTACT
5221 AATCACCTGACGCACCCAGTCACCAAATACATCATGACATGCTGGCCGACCTGGA

FIG. 62H

5281 GGTGTCACGAGCACCTGGGTGCTCGTTGGCGCGTCTGGCTGCTTGGCCGCGTATTG
CCAGCAGTGCTCGTGGACCCACGAGCAACCGCCAGGACCGACGAAACCGGGCGATAAC
5341 CCTGTCAACAGGGCTCGTGGTCATAGTGGCAGGGTCGTCTGTCCGGGAAGCCGGCAAT
GGACAGTTGTCCGACGCACCAAGTATCACCCGTCCCAGCAGAACAGGCCCTCGGCCGTTA
5401 CATACTGACAGGGAAAGTCCTTACCGAGAGTTGATGAGATGGAAGAGTGCTCTCAGCA
GTATGGACTGTCCCTTCAGGAGATGGCTCTCAAGTACTCTACCTTCTCACGAGAGTCGT
5461 CTTACCGTACATCGAGCAAGGGATGATGCTGCCAGCAGTTCAAGCAGAACGCCCTCGG
GAATGGCATGTAGCTCGTCCCTACTACGAGCGCTCGTCAAGTTCGTCTCCGGGAGCC
5521 CCTCCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCTGCTGTCCAGACCAACTG
GGAGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCAGGGGACGACAGGTCTGGTTGAC
5581 GCAAAAAACTCGAGACCTTCTGGCGAAGCATAATGTGGAACTTCATCAGTGGGATAACAATA
CGTTTTGAGCTTGGAAAGACCCGCTTGTATAACACCTGAAGTAGTCACCCATGTTAT
5641 CTTGGCGGGCTGTCAACGCTGCCGTGGTAACCCGCCATTGCTTCATTGATGGCTTTAC
GAACCGCCCGAACAGTTGCGACGGACCAATTGGGGCGGTAAACGAAGTAACCTACCGAAAATG
5701 AGCTGCTGTACCAAGCCCACTAACCACTAGCCAACCCCTCTTCAACATATTGGGGGG
TCGACGACAGTGGTCGGGTATTGGTATCGGTTGGGAGGAGAAGTTGTATAACCCCCC
5761 GTGGGTGGCTGCCAGCTGCCGCCGGTGGCTACTGCCTTGTGGCGCTGGCT
CACCCACCGACGGGTGAGCGGGGGCCACGGCGATGACGGAAACACCCCGGACCGAA
5821 AGCTGGCGCCGCCATGGCAGTGTGGACTGGGAAGGTCTCATAGACATCCTGCAGG
TCGACCGCGGGGGTAGCCGTACAACCTGACCCCTCCAGGAGTATCTGTAGGAACGTCC
5881 GTATGGCGCGGGCGTGGCGGGAGCTCTGTGGCATTCAGATCATGAGCGGTGAGGTCCC
CATACCGCGCCCGACCGCCCTCGAGAACACCGTAAGTTCTAGTACTGCCACTCCAGGG
5941 CTCCACGGAGGACCTGGTAATCTACTGCCGCCATCCTCTGCCCGGAGCCCTCGTAGT
GAGGTGCCTCCTGGACCAAGTTAGATGACGGCGGTAGGAGAGCAGGGCTGGGAGCATCA
6001 CGGCGTGGCTGTGCAGCAATACTGCGCCGGCACGTTGGCCGGCGAGGGGGCAGTGC
GCCGACCAAGACACGTCGTTATGACCGGGCGTGCACCGGGCCGCTCCCCGTACG
6061 GTGGATGAACCGGCTGATAGCCTCGCCTCCGGGGAACCATGTTCCCCACGCACTA
CACCTACTTGGCGACTATCGAAGCGGAGGGCCCCCTGGTACAAAGGGGGTGCCTGAT
6121 CGTGGCGAGAGCGATGCGACTGCCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAAC
GCACGGCCTCTCGTACGTCGACGGCGCAGTGAAGGTATGAGTCGTCGGAGTGACATTG
6181 CCAGCTCTGAGGCGACTGCACCAAGTGGATAAGCTGGAGTGTACCACTCCATGCTCCGG
GGTCGAGGACTCCGCTGACGTGGTCACCTATTGAGCCTCACATGGTGGAGGTACGAGGCC
6241 TTCCGGCTAACGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTAAAGACCTG
AAGGACCGATTCCCTGTAGACCCGTACCTATACTCGCTCCACAACCTCGCTGAAATTCTGGAC
6301 GCTAAAAGCTAACGCTATGCCACAGCTGCCCTGGATCCCTTGTGCTCTGCCAGCGCGG
CGATTTCGATTGAGTACGGTGTGACGGACCCCTAGGGAAACACAGGACGGTCGCGCC
6361 GTATAAGGGGGCTGGCGAGTGGACGGCATCATGCAACACTCGCTGCCACTGTGGAGCTGA
CATATTCCCCAGACCGCTCACCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACT
6421 GATCACTGGACATGTCAAAACGGGACGATGAGGATCGTCGGTCTAGGACCTGCAGGAA
CTAGTGACCTGTACAGTTTGCCTGCTACTCCTAGCAGCCAGGATCTGGACGTCCT
6481 CATGTGGAGTGGGACCTTCCCCATTAATGCCACACCAACGGGCCGTGACCCCCCTTCC
GTACACCTCACCCGGAAAGGGTAATTACGGATGTGGTGCCGGGACATGGGGGGAAAGG
6541 TGCGCCGAACACTACACGTTCGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAG

FIG. 62I

6601 GCAGGTGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCCGTG
CGTCCACCCCCCTGAAGGTGATGCACTGCCATACTGATGACTGTTAGAGTTACGGGCAC
6661 CCAGGTCCCATGCCGAATTTCACAGAATTGGACGGGTGCGCCTACATAGGTTGC
GGTCCAGGGTAGCGGGCTTAAAGTGTCTAACCTGCCACGGATGTATCCAACG
6721 GCCCCCTGCAAGCCCTGCTGCCGGAGGAGGTATCATTAGAGTAGGACTCCACGAATA
CGGGGGGACGTTGGAACGACGCCCTCCATAGTAAGTCTCATCCTGAGGTGCTTAT
6781 CCCGGTAGGGTCGCAATTACCTTGCAGGCCGAACCGGACGTGGCGTGGACGTCCAT
GGGCCATCCCAGCGTTAATGGAACGCTGCCCTCCATAGTAAGTCTCATCCTGAGGTGCTTAT
6841 GCTCACTGATCCCTCCCATAAACAGCAGAGGCAGGCCGGCGAAGGTTGGCGAGGGATC
CGAGTGAAGTGGAGGTATATTGTCGCTCCGCCGGCCGCTTCAACCAGCTCCCTAG
6901 ACCCCCCCTGTGGCCAGCTCCTGGCTAGCCAGCTATCCGCTCATCTCAAGGCAAC
TGGGGGGAGACACCGGTCGAGGAGCCGATCGTCGATAGGCAGGTAGAGAGTTCCGTTG
6961 TTGCACCGCTAACATGACTCCCTGATGCTGAGCTATAGAGGCCAACCTCCTATGGAG
AACGTGGCGATTGGTACTGAGGGACTACGACTCGAGTATCTCCGGTTGGAGGGATAACCTC
7021 GCAGGAGATGGCGGCAACATCACCAAGGGTTGAGTCAGAAAACAAAGTGGTATTCTGGA
CGTCCTCTACCCGCCGTTGAGTGGTCCAACTCAGTCTTGTTCACCAACTAAGACCT
7081 CTCCTCGATCCGTTGTGGCGAGGAGGACGAGCAGGGAGATCTCGTACCCGAGAAAT
GAGGAAGCTAGGCAGACCCGCCTCCTGCTGCCCTCTAGAGGCATGGCGTCTTAA
7141 CCTGCGGAAGTCTGGAGATTGCCAGGCCAGGGCTGCCGTTGGCGCGCCGGACTATAA
GGACGCCCTCAGAGCCTTAAGCGGGTCCGGACGGCAAACCCGCGCCGGCTGATATT
7201 CCCCCCGCTAGTGGAGACGTGGAAAAAGCCCAGTACGAACCACTGTGGTCCATGGCTG
GGGGGGCGATCACCTCTGCACCTTTTGGCTGATGCTTGGTGGACACCAGGTACCGAC
7261 TCCGCTTCCACCTCAAAGTCCCCTCCTGTGCCCTCGCCTCGGAAGAACGGGACGGTGGT
AGGCAGAGGTGGAGGTTCAAGGGAGGACACGGAGGCGAGCCTTCTGCCACCA
7321 CCTCACTGAATCAACCCATCTACTGCTTGGCCAGCCTCGCCACCAGAACGCTTGGCAG
GGAGTGAATTGGATAGATGACGGAACCGGCTGAGCGGTGGTCTCGAAACCGTC
7381 CTCCTCAACTCCGGCATTACGGCGACAATACGACAACATCCTCTGAGCCGCCCTTC
GAGGAGTTGAAGGCCGTAATGCCGCTGTTATGCTGTTAGGAGACTCGGGCGGGGAAG
7441 TGGCTCCCCCCCAGCTCGACGCTGAGTCCTATTCTCCATGCCCGGGCTGGAGGGGGA
ACCGACGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGACCTCCCCCT
7501 GCCTGGGGATCCGGATCTTAGCGACGGGTATGGTCAACGGTCAGTAGTGGAGGCCAACGC
CGGACCCCTAGGCCTAGAATCGCTGCCAGTACAGTTGCCAGTCATCACTCCGGTTGCG
7561 GGAGGATGTCGTGCTGCTCAATGCTTACTCTTGGACAGGGCAGCTCGTCACCCGTG
CCTCCTACAGCACGACGAGTTACAGAACATGAGAACCTGTCGCGTGGAGCAGTGGGGCAC
7621 CGCCGCGGAAGAACAGAAACTGCCCATCAATGCACTAACGCAACTCGTGTACGTACCA
GCGGCGCCTTCTGTCTTGTGAGGGTAGTTACGTGATTGAGCAACGATGCACTGGT
7681 CAATTGGTGTATTCCACCAACCTCACGCAGTGCTTGCCTAGGGCAGAACAGAAAGTCACATT
GTTAAACACATAAGGTGGTGGAGTGCCTGACGAACGGTTCCGCTTCTTCAAGTGTAA
7741 TGACAGACTGCAAGTTCTGGACAGCCATTACCAAGGACGTACTCAAGGAGGTAAAGCAGC
ACTGTCGACGTTCAAGACCTGTCGTTAATGGCCTGCTGAGTGTGAGCAACGATGCACTGGT
7801 GGCCTAAAGTGAAGGCTAACCTGCTATCCGTAGAGGAAGCTTGCAGCCTGACGCC
CCGCAGTTTCACTCCGATTGAACGATAGGCATCTCCCTGAAACGTCGGACTGCGGGG
7861 ACACCTCAGCCAATCCAAGTTGGTTATGGGGCAAAAGACGTCGTTGCCATGCCAGAAA

FIG. 62J

7921 GGCGTAACCCACATCAACTCCGTGGAAAGACCTCTGGAAGACAATGTAACACCAAT
CCGGCATTGGGTGAGTTGAGGCACACCTTCTGGAAGACCTCTGTTACATTGTGGTTA
7981 AGACACTACCACATGGCTAAGAACGAGGTTTCTGCGTTAGCCTGAGAAGGGGGTCG
TCTGTATGGTAGTACCGATTCTGCTCAAAGACGCAAGTCGGACTCTCCCCCAGC
8041 TAAGCCAGCTGCTCATCGTGTCCCCGATCTGGCGTGCCTGCGAAAAGATGGC
ATTCGGTGAGCAGAGTAGCACAAGGGGCTAGACCCGACGCGCACACGCTTTCTACCG
8101 TTTGTACGACGTGGTTACAAAGCTCCCTGGCGTGTGGGAAGCTCTACGGATTCCA
AAACATGCTGCACCAATGTTGAGGGGAACCGGACTACCCCTGAGGATGCCTAAGGT
8161 ATACTCACCAGGACAGCGGGTTGAATTCTCGTGCAAGCGTGGAAAGTCCAAGAAAACCC
TATGAGTGGTCTGCCCCACTTAAGGAGCACGTTGACCTTCAGGTTCTGGGG
8221 AATGGGGTTCTGTATGATAACCGCTGCTTGACTCCACAGTCAGTGAGAGCGACATCCG
TTACCCCAAGAGCATACTATGGGCACGAAACTGAGGTGTCAGTGACTCTGCTGTAGGC
8281 TACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGCCCGCGTGGCCATCAA
ATGCCCTCCCGTTAGATGGTTACAACACTGGAGCTGGGGGTCGGCGCACCGGTAGTT
8341 GTCCCTCACCGAGAGGCTTATGTTGGGGCCCTTACCAATTCAAGGGGGAGAACGT
CAGGGAGTGGCTCTCGAAATAACACCCCCGGGAGAATGGTTAAGTTCCCCCTTGTAC
8401 CGGCTATCGCAGGTGCCCGCGAGCGGGCTACTGACAACTAGCTGTGGTAACACCCCTCAC
GCCGATAGCGTCCACGGCGCGCTGCCGATGACTGTTGATCGACACCATTGTGGAGTG
8461 TTGCTACATCAAGGCCCGGGCAGCTGAGCCGAGGGCTCCAGGACTGCACCATGCT
AACGATGTAGTCCGGGCCCCTCGGACAGCTCGCGTCCGAGGTCTGACGTGGTACGA
8521 CGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGTCAGGAGGACGCGGC
GCACACACCGCTGCTGAATCAGCAATAGACACTTCGCGCCCCAGGTCTCGCGCCG
8581 GAGCCTGAGAGCCTCACGGAGGCTATGACCAGGTACTCCGCCCTGGGGACCCCCC
CTCGGACTCTCGGAAGTGCCTCCGATACTGGTCATGAGGCGGGGGGACCCCTGGGG
8641 ACAACCAGAATACGACTGGAGCTCATACATGCTCTCAACGTGTCAGTCGCCA
TGTTGGTCTTATGCTGAACCTCGAGATTGTAGTACGAGGAGGTTGCACAGTCAGCGGGT
8701 CGACGGCGCTGGAAAGAGGGTCTACTACCTCACCGTACCCCTACAACCCCCCTCGCGAG
GCTGCCCGACCTTCTCCAGATGATGGAGTGGCACTGGATGTTGGGGGAGCGCTC
8761 AGCTGCGTGGAGACAGCAAGACACACTCCAGTCATACTGGCTAGGCAACATAATCAT
TCGACGCACCCCTGTCGTTCTGTGAGGTCACTGGTAAAGAAATCGCAGGAATA
8821 GTTTGCCCTACACTGTGGCGAGGATGATACTGATGACCCATTCTTACGCTCTTAT
CAAACGGGGGTGTGACACCCGCTCTACTATGACTACTGGTAAAGAAATCGCAGGAATA
8881 AGCCAGGGACCAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCTGCTACTCCAT
TCGGTCCCTGGTCGAACCTGTCCGGAGCTAACGCTCTAGATGCCCGGACGATGAGGTA
8941 AGAACCACTTGATCTACCTCCAATCATTAAAGACTCCATGGCCTCAGCGCATTTCACT
TCTGGTGAACTAGATGGAGGTTAGTAAGTTCTGAGGTACCGGAGTCGCGTAAAGTGA
9001 CCACAGTTACTCTCCAGGTGAAATTAAAGGGTGGCCGATGCCCTCAGAAAACCTGGGGT
GGTGTCAATGAGAGGTCCACTTAATTATCCCACCGCGTACGGAGTCTTGTGAACCCCA
9061 ACCGCCCTTGCAGCTGGAGACACCGGGCCCGAGCGTCCCGCCTAGGCTCTGGCCAG
TGGCGGGAACGCTCGAACCTCTGTGGCCCGGGCTCGCAGGCGCAGTCGAAGACCGGTC
9121 AGGAGGCAGGGCTGCCATATGTGGCAAGTACCTCTCAACTGGGAGTAAGAACAAAGCT
TCCTCCGTCCCGACGGTACACCGTTCATGGAGAAGTTGACCCGTATTCTGTTCGA
9181 CAAAC
GTTTG

NH₂ -

FIG. 63

-COOH

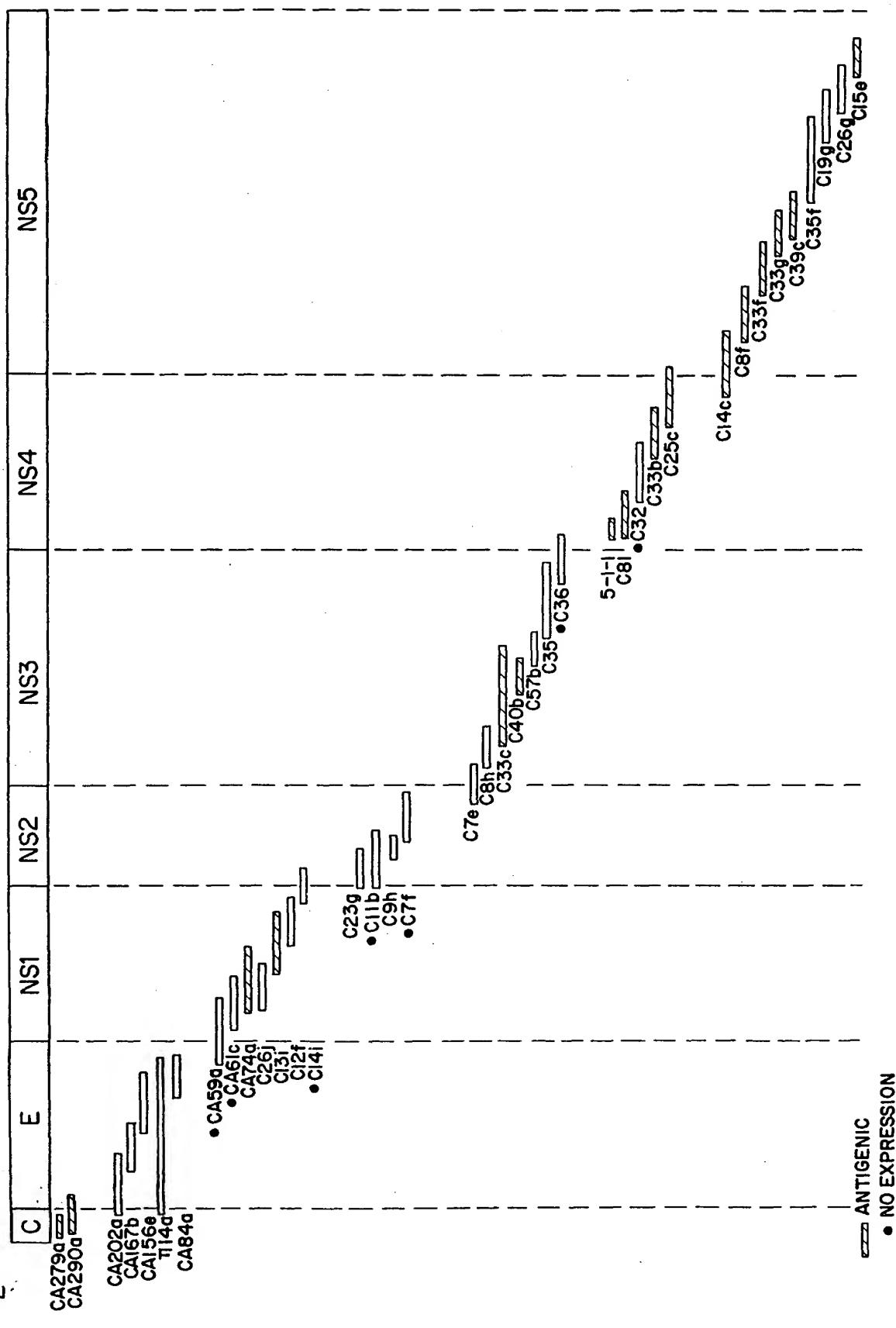
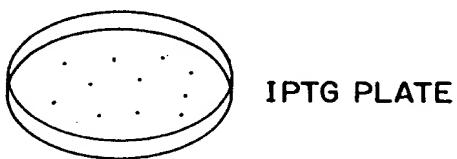


FIG. 64

TRANSFORM E coli WITH RECOMBINANT PLASMIDS

↓ (BLOT BACTERIA ON
NITROCELLULOSE FILTER)



IPTG PLATE



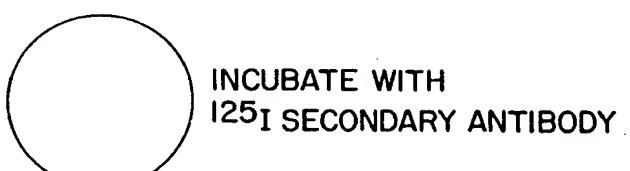
LYSE WITH CHLOROFORM

↓ BSA ABSORBTION/DNAse/LYSOZYME



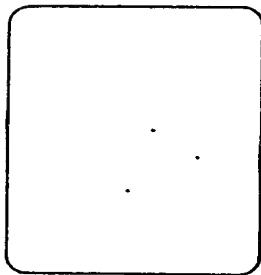
INCUBATE WITH PRIMARY
ANTIBODY

↓ WASH



INCUBATE WITH
 ^{125}I SECONDARY ANTIBODY

↓ WASH



AUTORADIOGRAPH

	CHIMPS	EXPRESSION LEVEL	CHRONIC HCV PATIENT C100 POSITIVE								CHRONIC HCV PATIENT C100 NEGATIVE								CONVALESCENT C100 NEGATIVE	COMMUNITY AC
			1. POST ACUTE	2. POST ACUTE	3. C100 CONVERSION	2	3	4	5	6	7	8	2	3	4	5	6	7	8	
SOD	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CA259a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
CA290a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CA202a	N.T.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CA167a	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CA156C	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$\pi 14a$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CA84a	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CA59a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CA61C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CA74a	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C26j	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl3i	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl2f	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl4i	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C23g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl1b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C9h	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C7f	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C7e	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C8h	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C33c	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C40g	+	-	-	-	-	-	-	-	-	-	†	-	-	-	-	-	-	-	-	-
C37b	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C35	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C36	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5-11	+	-	-	+	±	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C8l	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-	-	-
C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C33b	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
C25c	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Cl4c	+	-	-	+	-	-	-	-	-	-	-	+	+	-	-	-	+	-	-	-
C8f	+	-	-	+	-	+	-	+	-	+	-	-	-	+	-	-	+	-	-	-
C33f	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	+	-	-	-
C33g	+	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	+	-	-	-
C39c	+	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	+	-	-	-
C35f	N.T.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl9g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C26g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl5e	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	±	-	-	-

N.T. = EXPRESSION NOT TESTED

† THIS POLYPEPTIDE WAS NEGATIVE IN THIS
COLONY SCREEN BUT POSITIVE BY WESTERN
BLOD ANALYSIS

FIG. 65

FIG. 66A

R T

MSTNPKPQKKNRNTNRRPQDVKFPGGGQIVGGVYLLPRRGPRLGVRATR
KTTERSQPRGRRQP1PKARRPEGRTWAQPGYPWPLYGNEGCGWAGWLLSP-100
RGSRPSWGPTDPRRRSRNLGVIDTLCGFADLMGYIPLVGAPLGGAAARA

T

LAHGVRVLEDGVNYATGNLPGCSFSIFLALLSCLTVPASAYQVRNSTGL-200
YHVTNDCPNSSIVYEAADAILHTPGCVCVREGNASRCWAMTPTVATRD
GKLPATQLRRHIDLVLGSATLCALYVGDLGSVFLVGQLFTSPRRHWT-300

V

TQGCNCISIYPGHIITGHRMAWDMMMNWSPTTALVMAQLLRIPQAIDMIAG
AHWGVLAGIAFMSMVGNWAKVLVVLLLFAFGVDAETHVTGGSAGHTVSGFV-400
SLLAPGAKQNVQLINTNGSWHLNSTALNCNDSLNTGWLALFYHHKFNS
GCPERLASCRPLTDFDQGWGPISYANGSGPDQRPYCWHYPPKPCGIVPAK-500
SVCGPVYCFTPSPVVVGTTDRSGAPTYSWGENDTDVFVLLNNTRPPLGNWF
GCTWMNSTGFTKVCGAPPVCIGGAGNNTLHCPTDCFRKHPDATYSRCGSG-600

I

PWLTPRCLVDYPYRLWHYPCTINYTIKIRMYVGGVEHREAACNWTRGE
RCDLEDRDRSELSPLLTTTQWQVLPSCFTTLPALSTGLIHLHQNIVDVQ-700
YLYVGSSIASWAIKWEYVVLFLLLADARVCSCLWMMLLISQAEEALEN
LVILNAASLAGTHGLVSFLVFFCAWYLKGKWVPGAVYTIFYGMWPLLLL-800

(N)

LALPQRAYALDTEVAASC GG VVLVGLMALTLS PYY KRY ISWCLWWLQYFL
TRVEAQLHWIPLNVRGGRDAVILLMCAVHPTLVFDITKLLLAVFGPLN-900
ILQASLLKVPYFVRVQGLLRFCA LARKMIGGHYVQMVI IKLGALTGTYYV
NHLTPLRDWAHNGLRDLAVAVEFVVFSQMETKLITWGADTAACGDIINGL-1000
PVSARRGREILLGPADGMVSKGWRL LAPITAYAQQT RGLLGCIITSLTGR
DKNQEVEGEVQIVSTAQTTFATCINGVCWTVYHGAGTRTIA SPKGPIQM-1100
YTNDQDLVGWPAPQGSRSLLTCTCGSSDLYL VTRHADVIPVRRRGDSRG
SLLSPRPISYLGSSGGPLLCPAGHAVGIFRAAVCTRGVAKAVDFIPVEN-1200
LETTMRSPVFTDNSSPPVVPQS FQVAHLHAPT GSGKSTKVPAAYAAQGYK

L

VLVLNPSVAATLGFGAYMSKAHGIDPNIRTGVRTITTGSPITYSTYKFL-1300
ADGGCGGGAYDIIICDECHSTDATSI LGIGTVLDQAETAGARL VVLATAT
PPGSVTVPHPNIEEVALSTTGEIPFYGKAIPLEVIKGGRHLIFCHSKKKC-1400
DELAAKLVALGINAVAYYRGLDVSVIPTSGDVVVVATDALMTGYTGDFDS

Y

(S)

VIDCNTCVTQTVDFSLDPTFTIETITLPQDAVSRTQRRGRTGRGKPGIYR-1500
FVAPGERPSGMFDSSVLCECYDAGCAWYELTPAETTVRLRAYMNTPLPV
CQDHLEFWEGVFTGLTHIDAHFLSQTKQSGENLPYLVAYQATVCARAQAP-1600
PPSWDQMWKCLIRLKPTLHGPTPLL YRLGAVQNEITLTHPVTKYIMTCMS
ADLEVVTSTWVLVGGVLAALAAAYCLSTGCVVIVGRVVLSGKPAIIPDREV-1700
LYREFDEMEEC SQHLPIEQGMM LAEQFKQKALGLLQTA SRQAEVIA PAV
QTNWQKLET FWAKHMWNFISGIQYLAGLSTLPGNP AIASLMAFTAATVSP-1800
LTTSQTLLFNILGGWVAAQLAAPGAATAFVGAGLAGAAIGSVGLGKVLID

FIG. 66B

(G)
ILAGYGAGVAGALVAFKIMSGEVPSTEDLVNLLPAILSPGALVVGVVCAA-1900

(HC)
ILRRHVGPGEHAVQWMNRILAFASRGNHVSPTHYVPESDAAARVTAILSS
LTVTQLLRLHQWISSECTTPCSGSWRDIWDWICEVLSDFKTWLAKLM-2000

(V)
PQLPGIPFVSCQRGYKGWWRGDGIMHTRCHCGAEITGHVKNGTMRIVGPR
TCRNMWSGTFPINAYTTGPCTPLPAPNYTFALWRVSAEEYVEIRQVGDFH-2100
YVTGMMTDNLKCPCQVPSPEFFTTELGVRLHRFAPPCKPLLREEVSFRVG
LHEYPVGSQLPCEPEPDVAVLTSMLTDPHSITAEEAGRRLARGSPPSVAS-2200
SSASQLSAPSLKATCTANHDSPDAELIEANLLWRQEMGGNITRVESENKV
VILDSFDPLVAEEDEREISVPAEILRKSRRFAQALPVWARPDYNPPLVET-2300

S
WKKPDYEPPVVGCPPLPPPKSPPVPPRKRTVVLTESTLSTALAELATR

(FA)
SFGSSSTSGITGDNTTSSEPAKSGCPPSDAESYSSMPPLEGEPGDPDL-2400
SDGSWSTVSSEANAEDVVCCSMSYSWTGALVTPCAAEEQKLPIINALSNSL
LRHHNLVYSTTSRSACQRQKKVTFDRLQVLDHYQDVLKEVKAASKVKA-2500

(F)
NLLSVEEACSLTPPHSAKSKFGYGAKDVRCHARAKAVTHINSVWKDLLEDN
VTPIDTTIMAKNEVFCVQPEKGRKPARLIVFPDLGVRVCEKMALYDVVT-2600
KLPLAVMGSSYGFQYSPGQRVEFLVQAWKSKKTPMGFSYDTRCFDSTVTE

(G)
SDIRTEEAIFYQCCDLDPQARVAIKSLTERLYVGGPLTNSRGENGYRRCR-2700
ASGVLTTSCGNTLTCYIKARAACRAAGLQDCTMLVCGDDLVVICESAGVQ
EDAASLRAFTEAMTRYSAPPGDPPQPEYDLELITSCSSNVSAHDGAGKR-2800
VYYLTRDPTTPLARAABETARHTFVNWLGNIMFAPTLWARMILMTHFF
SVLIARDQLEQALDCEIYGACYSIEPLDLPPIQRLHGLSAFLHSYSPG-2900

G
EINRVAACLRKLGVPPLRAWRHRARSVRARLLARGGRAAICGKYLFNWAV
RTKLK----- (Stop codon not yet reached)

() = Heterogeneity due to possible 5' or 3'
terminal cloning artefacts.

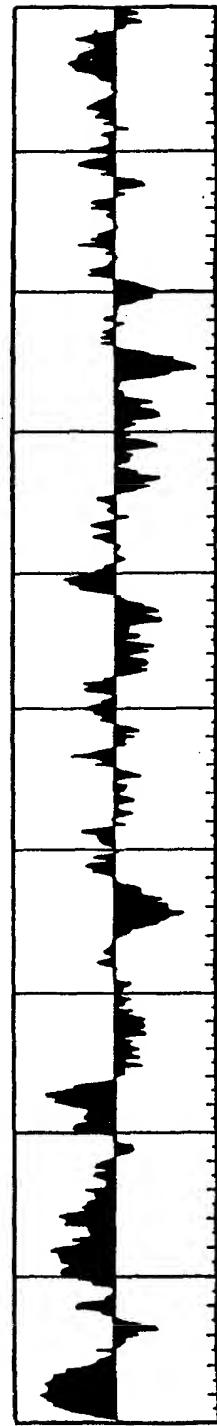
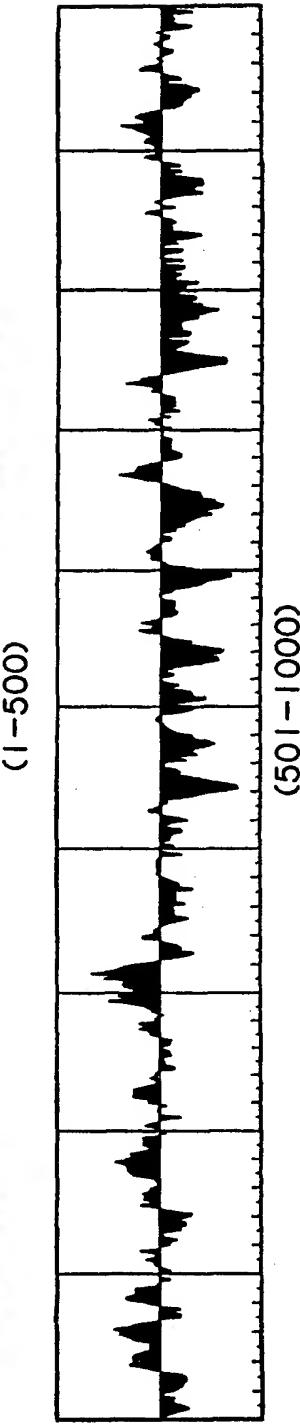
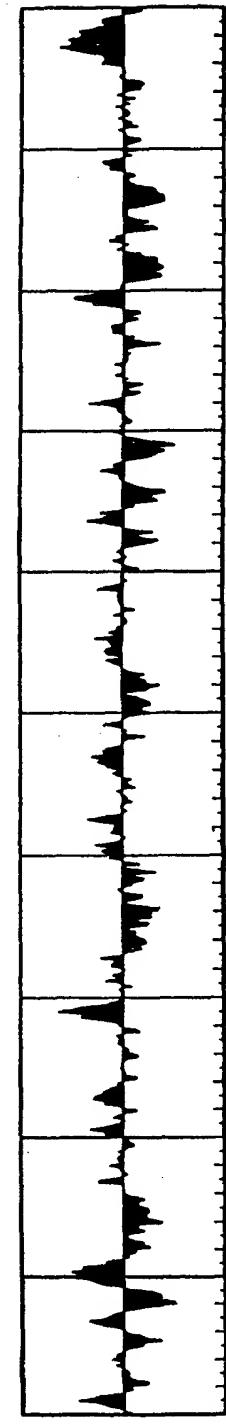


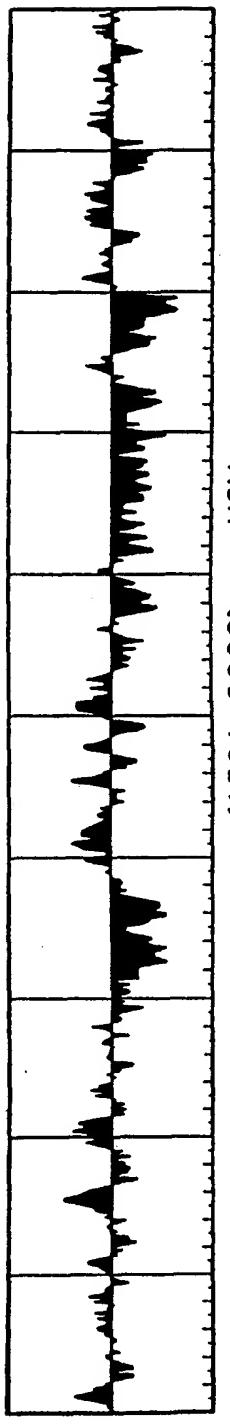
FIG. 67A



(501-1000)



(1001-1500)



(1501-2000) HCV

FIG. 67B

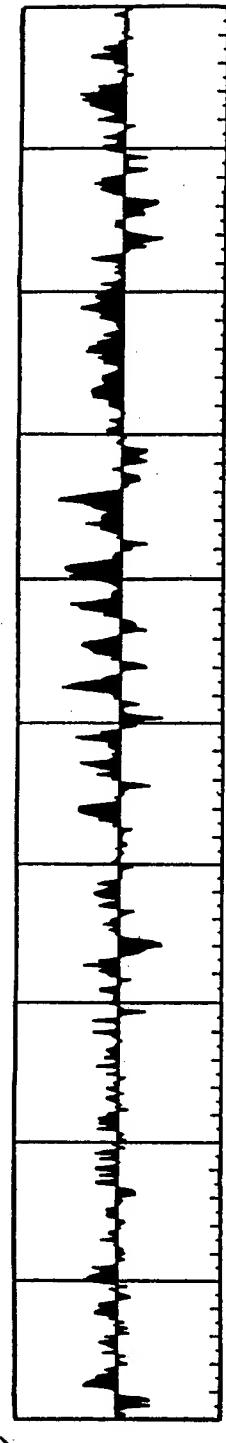
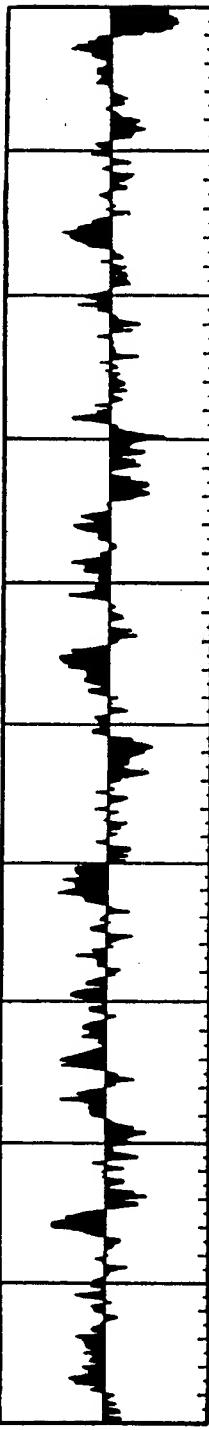


FIG. 67C

(2001-2500)



(2501-3000)

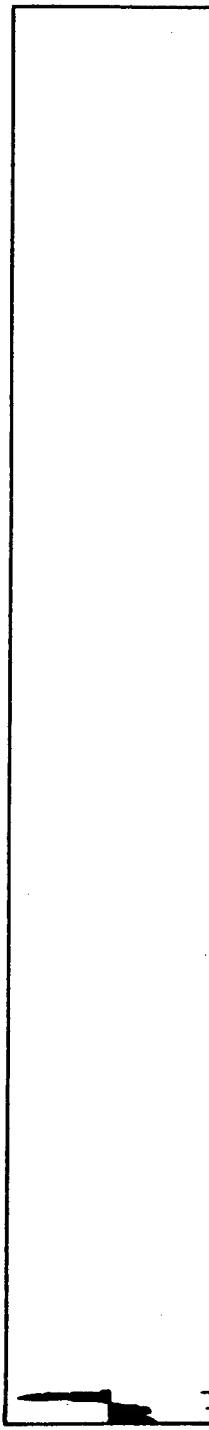


FIG. 67D

(3001-3011) HCV

FIG. 68

NS3 region	NS5 Highly-conserved Polymerase region	
Flaviviruses (Yellow Fever, West Nile,Dengue)	TATPPG-----SAAQRRGRIGRNP-----GDDCVV	
	***** * * * * *** ***	
HCV	TATPPG-----SRTQRRGRTGRGK-----GDDLVV	
#1348	#1483	#2737

FIG. 73

5' CGGGCGAGGGGGCAGTGCAGTGGATGAACCGGCTGATAGCCTCGCCTCCGGGGAAAC
3' CGCTCCCCGTCACTCACCTACTTGCCGACTATCGGAAGCGGAGGGCCCCTTG 3'

5' CATGTTCCCCTAATGAG 3'
3' GTACAAAGGGGGATTACTCAGC 5'

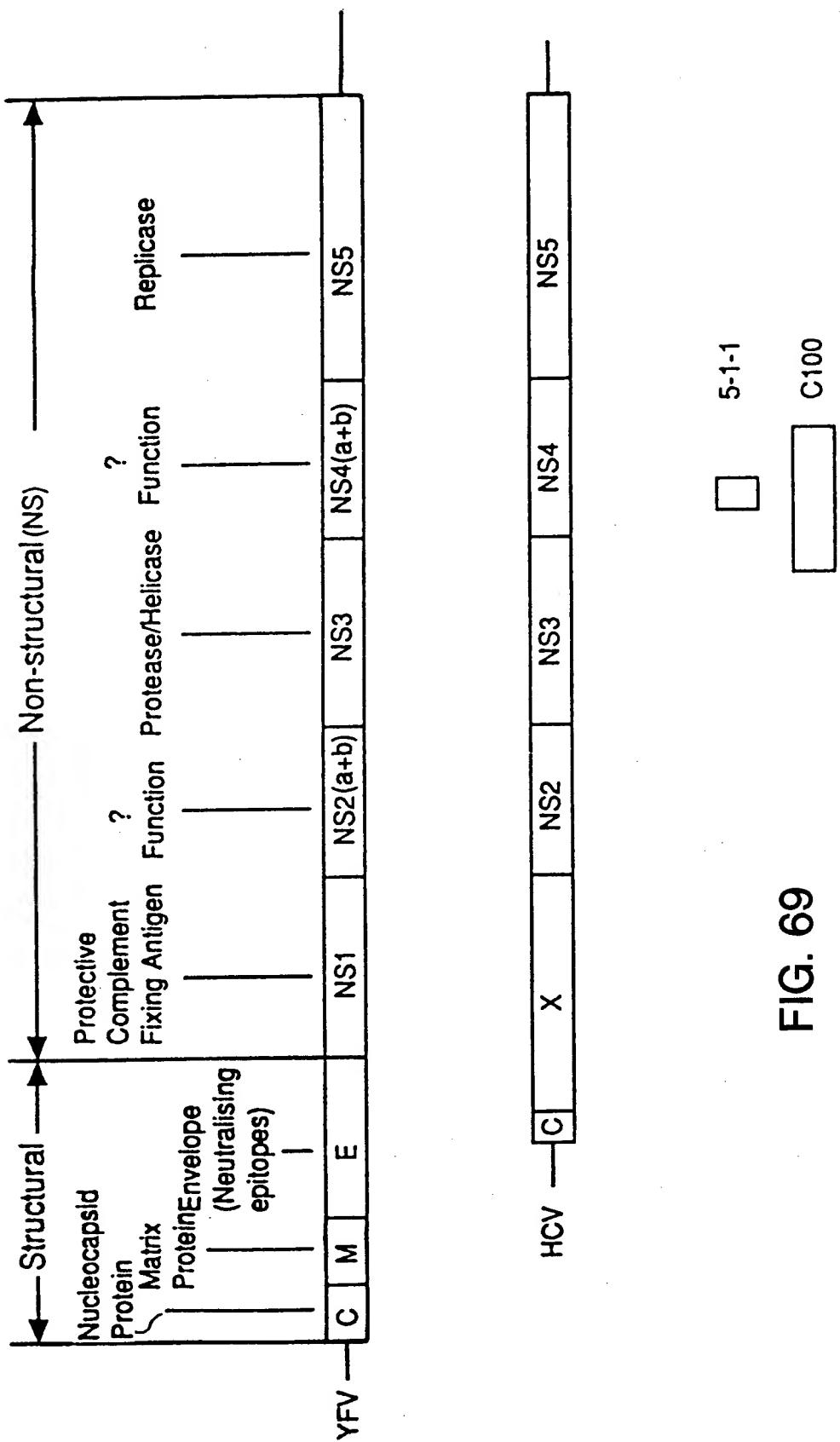


FIG. 69

FIG. 70

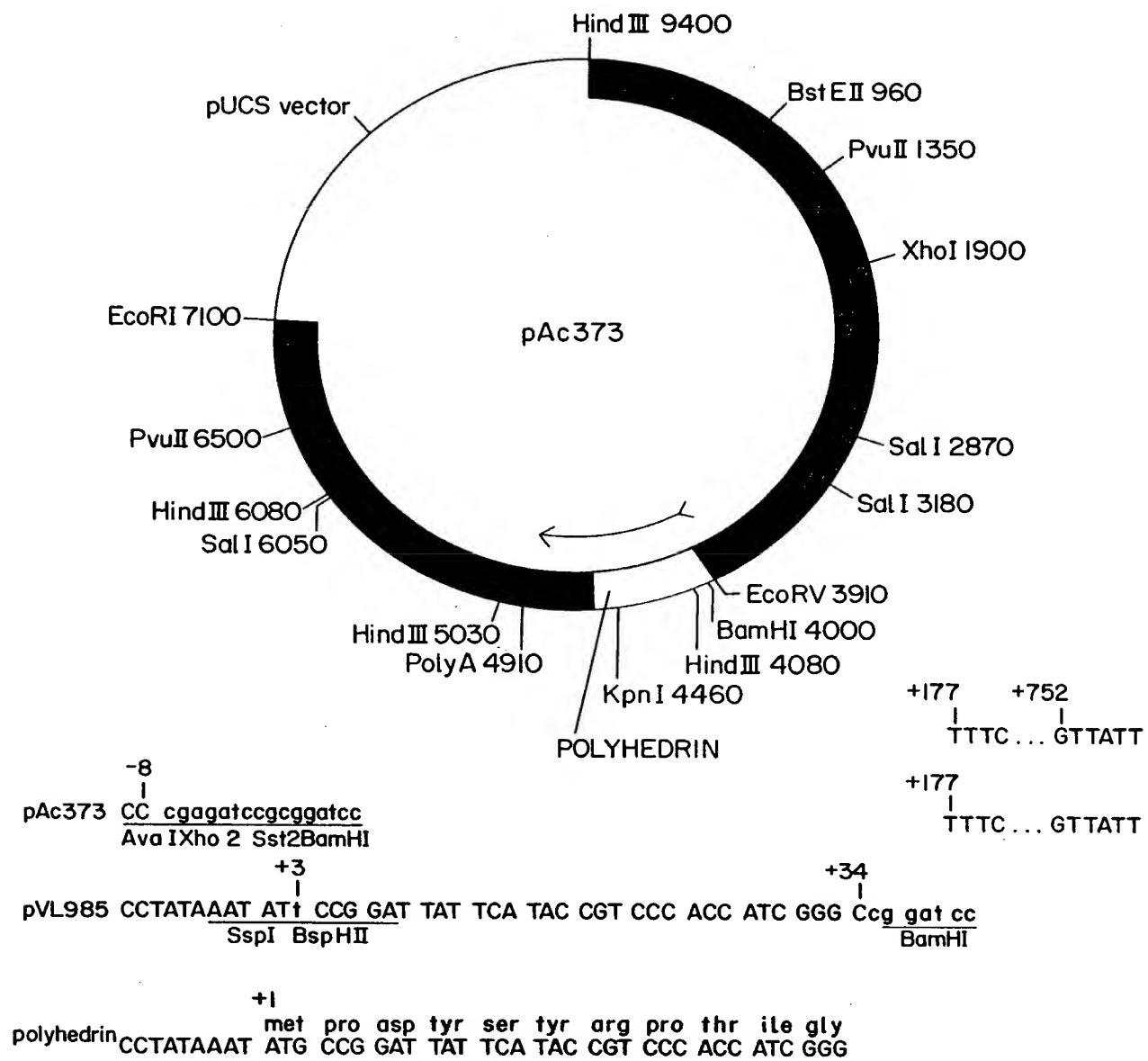


FIG. 71

-----Overlap with 16jh-----
1 GlyArgAlaAlaIleCysGlyLysTyrLeuPheAsnTrpAlaValArgThrLysLeuLys
GGCAGGGCTGCCATATGTGGCAAGTACCTCTCAACTGGCCAGTAAGAACAAAGCTCAA
CGTCCCCACGGTATAACACGGTTCATGGAGAAGTTGACCCCGTCATTCTGTTCCGACTT
-
61 LeuThrProIleAlaAlaAlaAlaGlyGlnLeuAspLeuSerGlyTrpPheThrAlaGlyTyr
CTCACTCCAATAGCGGCCGCTGGCCAGCTGCACTTGTCCCCTGTTCACGGCTGGCTAC
GAGTGAGGTTATCGCCGGGACCCGGTCGACACTGAACAGGCCGACCAAGTGCCGACCGATG
SerGlyGlyAspIleTyrHisSerValSerHisAlaArgProArgTrpIleTrpPheCys
121 AGCGGGGGAGACATTATCACAGCGTGTCTCATGCCGGCCCGCTGGATCTGGTTGC
TCGCCCCCTCTGTAAATAAGTGTGGCACAGAGTACGGGGGGGGGACCTAGACCAAAACG
-
181 CC
GG

FIG. 72A

MetSerThrAsnProLysProGlnargLysThrLysargAsnThrAsnarginargArgProGln
1 ATGAGCACGAATCCTAAACCTCAAAAAAAACAACGTAACACCAACCGTCGCCACAG
TACTCGTGCTTAGGAGTTGGAGTTTTTTGCTATGGGTGGCAGGGGTGTC
AspValLysPheProGlyGlyGlyGlnilevalGlyGlyValTyrLeuLeuProArgArg
61 GACGCTCAAGTTCCCGGGTGGGGTCAGATCGTGGAGTTACTTGTGGGGCAGG
CTGCAGTTCAAGGGCCACGCCAGTCTAGCAACACCACCTCAAATGAACAAACGGCGGTCC

FIG. 72B

121 GlyProArgLeuGlyValArgAlaThrArgLysThrSerGluArgSerGlnProArgLY
GGCCCTAGATTGGGTGTGGCGACGAGAAAGACTTCCAGCGGTGCCAACCTCGAGGT
CCGGATCTAACCCACACGGCGCTGCTTCTGAAGGGTCCCAGCGTTGAGCTCCA

181 ArgArgGlnProIleProLysAlaArgArgProGluGlyArgThrTrpAlaGlnProGly
AGACGTCAAGCTTATCCCCAAGGCTCTGGCTCGTGGGGAGGGCAGGACCTGGCTCAGCCCCGG
TCTGCAGTCGGATAGGGGTTCCGGAGCAGCCGGCTCCGGACCCGAGTCGGGCC

241 TyrProTrpProLeuTyrglyAsnGluGlyTrpAlaGlyTrpLeuLeuSerPro
TACCCCTGGCCCTCTATGGCAATGAGGGCTGGGGTGGCGGGATGGCTCCATGTCICCCC
ATGGGAACCGGGGAGATAACCGTTACTCCGACGCCACCCGGCCCTACCGAGGACAGAGGG

301 ArgGlySerArgProSerTrpGlyProThrAspProArgArgSerArgAsnLeuGly
CGTGGCTCTGGCTTAGCTGGCCCCACAGACCCCCGGTCAAGTCGGCAATTGGGT
GCACCGAGGCCGGATCGACCCGGGTCTGGGGGTCTGGGGCATCCAGGGCGTTAACCCA

361 LysValIleAspThrLeuThrCysGlyPheAlaAspLeuMetGlyTyrIleProLeuVal
AAGGTCAATCGATAACCTTACGTGGGAATGCCGACCTCATGGGTACACCGCTCGTC
TTCCAGTAGCTATGGGAATGCCAAGGGGCTGGAGTACCCCATGTATGGCGAGCAG

421 GlyAlaProLeuGlyAlaAlaArgAlaLeuAlaHisGlyValArgValleuGluAsp
GGGGCCCTCTGGAGGGCGCTGCCAGGGCCATGGCTCCGGTTCTGGAAAGAC
CCGGGGGAGAACCTCCGGGACGGTCCGGGACCCGGTACCCGAGGCCAACACCTCTG

FIG. 72C

GlyValAsnTyrAlaThrGlyAsnLeuProGlyCysSerPheSerIlePheLeuLeuAla
GGCGTGAACATATGCCAACAGGGAAACCTTCCCTGGTGGCTCTATCTTCCTTCTGGCC
CCGCACTTGATACTGTTGCTCCCTGGAAGGACCAACGAGAAAGAGATAAGAAGACCGG

LeuLeuSerCysLeuThrValProAlaSerAlaTyrGlnValArgAsnSerThrGlyLeu
541 CTGGCTCTCTGCTTGACTGTGCCCCGCTTCCCAACTGGCAACTCCACGGGGCTT
GACGAGAGAACGAAACTGACACGGCGAAGGCCGATGGTTACGGCTCACGGTTGAGGTGCCGAA

TyrHisValThrAsnAspCysProAsnSerSerIleValTyrGluAlaAlaAspAlaAlle
601 TACCACTGCACTGATTGCCCTAACTCGAGTATTGTGTTACGAGGCCGATGGCTACGGTAG
ATGGGTGCACTGGTTACTAACGGGATTGAGCTCATAACACATGCTCCGGCTACGGTAG

LeuHisThrProGlyCysValProCysValArgGluGlyAsnAlaSerArgCysTrpVal
661 CTGCACACTCGGGGGTGGCGTCCCTGGGTTCTGAGGGCAACGCCCTCGAGGTGTTGGTG
GACGTGTGAGGCCACACGCAAGGAAACGCAACTCCCCTGGAGATGCACACAC

AlaMetThrProThrValAlaThrArgAspGlyLysLeuProAlaThrGlnLeuArgArg
721 GCGATGACCCCTACGGTGGCCACCAAGGGATGGCAAACACTCCCCGGACGGCAGCTTGACGT
CGCTTACTGGGGATGCCACCCGTTGGCTCCCTACCGTTGAGGGGCTTGCGTCCGAAGCTGCA

HisIleAspLeuLeuValGlySerAlaLeuCysSerAlaLeuTyrvAlIGlyAspLeu
781 CACATCGATCTGCTTGTGGGAGGCCACCCCTCTGTTGGGAGACAAGCCGGAGATGCAC
GTGTAGCTAGACGAACAGCCCTGGGAGACAAGGAGATGGCACCCTGGAC

CysGlySerValPheLeuValGlyGlnLeuPheThrPheSerProArgArgHistrpThr
841 TGGGGGTCTGTCTTCTGGCCAACTGTTCACCTCTCCAGGGCCACTGGACG
ACGCCACAGAAAAGAACAGCCGGTTGACAAGTGGAAAGAGAGGGTCCGGGTGACCTGC

FIG. 72D

901		ThrglnGlyCysAsnCysSerIleThrGlyHisArgMetAlaTrp ACGCAAGGGTTGCAATTGGCTATCTATCCGGCATATAACGGGTACCGGCATGGCATGG TGGCTTCCAACGTTAACGAGATAAGGGGTTATTCGGCCAGTACCGTACCGTACCGTACCG
961		AspMetMetAsnTrpSerProThrThrAlaLeuValMetAlaGlnLeuLeuArgile GATATGATGATGAACCTGGTCCCTACGACGGCTTAATGGCTCAGCTGGGAAACCATTACCGAGTGCTGCCGAAACCCTACGAGTGACCCCTACCGACTAGCGACCACGAGTACCTGTACTAGCGACCACGACTAGCGTACCGAGTACCGTACCG
1021		ProGlnAlaIleLeuAspMetIleAlaGlyAlaHistrpGlyValLeuAlaGlyIleAla CCACAAGCCATCTGGACATGATCGCTCAC TGCTGGGACTCTGGGACTCTGGGCAATTAGCG GGTGGTGGTAGAACCTGTACTAGCGACCACGAGTACCTGTACTAGCGACCACGACTAGCGTACCGAGTACCGTACCG
1081		TyrPheSerMetValGlyAsnTrpAlaLysValLeuValLeuLeuLeuPheAlaIleGly TATTTCATGGGGAAACTGGGCAAGGGTCTGGTAGTGCTGCTATTGGCTATTGGCCGGC ATAAAGAGGTACCACCCCTTGACCCGCTTCCAGGACCATCACGACGATAAACGGCCG
1141		ValAspAlaGluThrHisValThrGlySerAlaGlySerAlaGlySerValSerGlyValSerGlyValSerGlyVal GTCGACGCCAAACCCACGTCACCGGGGGAAAGTGGCCGGCCACACTGTGTGGATTGTGTT CAGCTGGCCTTGGTGCAGTGGCCCTACGGGGTGTGACACAGACCTAAACCAA
1201		SerLeuLeuAlaProGlyAlaLysGlnAsnValGlnLeuIleAsnThrAsnGlySerTrp AGCCTCTGGCACCGGCCAAGCAGTCAGCTGATCAACACCAACGGCAGTTGG TCGGGAGGGTGGTCTTGGGTGACTAGTTGTGGTGGTCAAC

FIG. 72E

HisLeuAsnSerThrAlaLeuAsnCysAsnAspSerLeuAsnThrGlyTrpLeuAlaGly
1261 CACCTCAATAGCACGGCCCTGAACTGCAATGATAAGCTCAACACCCGGCTGGTGGCAGGG
GTGGAGTTATCGTGGCCGGACTTGACGTTACTATGGAGTGGCTAACCGTCCCC

LeuPheTyrHisIleAsnSerSerGlyCysProGluArgLeuAlaSerCysArg
1321 CTTTTCTATCACCACAAGTTCAACTCTCAGGCTGTCCCTGAGGGCTAGCCAGCTGCCGA
GAAAAGATAAGTGGTGTCAAGTTGAGAAGTCCGACAGGACTCTCGATGGTCGACGGCT

ProLeuThrAspPheAspGlnGlyTrpGlyProIleSerTyrAlaAsnGlySerGlyPro
1381 CCCCTTACCGATTGACCAGGGCTGGGGCCCTATCA GTTATGCCAACCGGAAGCGGCC
GGGGAATGGCTAAAACCTGGTCCC GACCCCCGGATAGTCAAATACGGTTGCCTTCGCCCCGG

AspGlnArgProTyrCystrpHistyrProProLysProCysGlyIleValProAlaLys
1441 GACCAGGGCCCTACTGCTGGCACTACCCCCAAACCTGCGGTATTTGTGCCGGCAAG
CTGGTCCGGGGATGACGACCCTGATGGGGGTTGGAACGCCATAACACGGGCCCTC

SerValCysGlyProValTyrCysPheThrProSerProValValValGlyThrThrAsp
1501 AGTGTGTGGTCCGGTATATTGCTTCACTCCAGCCCCGTGGTGGGAACGACCGAC
TCACACACCCAGGCCATAAACGAAAGTGAAGTGGGGCACCACCCCTGCTGGCTG

ArgSerGlyAlaProThrTyrSerTrpGlyGluAsnAspThrAspValPheValLeuAsn
1561 AGGTGGGGCGCCACCTACAGCTGGGTGAAATGATA CGGACGTCTTCGTCCTTAAC
TCCAGCCCCGGGGGGATGTCGACCCCACTTACTATGCCCTTACTATGCCCTGAGCAGGAATTG

FIG.72F

AsnThrArgProProLeuGlyAsnTrpPheGlyCysThrTrpMetAsnSerThrGlyPhe
1621 AATACCGGCCACCCGCTGGCAATTGGTTGGTACCTGGATGAACACTCAACTGGATTCTTATGGTCCGGTGGCGAACCTAACAGCCAAACATGGACCTACTTGAGTTGACCTAAG

ThrLysValCysGlyAlaProProCysValIleGlyGlyGlyAlaGlyAsnAsnThrLeuHis
1681 ACCAAAGTGTGGGAGGCCCTCCTTGTGTCAATCGGAGGGGGCAACAAACACCCCTGCAC
TGGTTTCACAGCCTCGGGAGGAACACAGTAGCCTCCCCCGTGTGGGACGTG

CysProThrAspCysPheArgLysHisProAspAlaThrTyrSerArgCysGlySerGly
1741 TGCCCCCACTGATTGCTTCCGCAAGCATCCGGACGCCACATACTCTGGTGTGGCTCCGGT
ACGGGGGTGACTAACGAAAGGGCTTCTGGCTTAGGGCTAGGCTATGAGGCCACGGCCACGGCCA

ProTrpLeuThrProArgCysLeuValAspTyrProTyrrArgLeuTrpHisTyrProCys
1801 CCCTGGATCACACCCAGGTGCCCTGGTCAACTACCCGGTATAGGCTTGGCATTTATCCTTGT
GGGACCTAGTGTGGGTATAAAATTAGTCCTACATGCACCCCTCCCCAGCTTGTGTCCGAC

ThrIleAsnTyrThrIlePheLysIleArgMetTyrvalGlyGlyValGluHisArgLeu
1861 ACCATCAACTACACCATAATTAAATCAGGATGTGGCATATCCGAACCCGTAAATAGGAACA
TGGTAGTTGATGTGGTATAAAATTAGTCCTACATGCACCCCTCCCCAGCTTGTGTCCGAC

GluAlaAlaCysAsnTrpThrArgGlyGluArgCysAspLeuGluAspArgAspArgSer
1921 GAAGCTGGCTGGCAACTGGACGGGGCGAACGTTGGCATCTGGAAAGACAGGGACAGGTCC
CTTCGACGGACGCTTGACCTGGCTTGGCAACGGCTAGACCTTCTGTCCCTGTCCAGG

GluLeuSerProLeuLeuThrThrGlnTrpGlnValLeuProCysSerPheThr
1981 GAGCTCAGCCCCGTTACTGCTGACCAACTACACAGTGGCAGGTCCCGTGTCCCTTCACA
CTCGAGTCGGGCAAATGACGGACTGGTGTGATGTTGACCTGGCACCCTGGCACAAAGGAAGTGT

FIG. 72G

ThrLeuProAlaLeuSerThrGlyLeuIleHisLeuHisGlnAsnIleValAspValGln
2041 ACCCTACCGCCCTTGCCACCCGGCTCATCCACCTCACCAGAACATTTGTGGACGTCAG
TGGGATGGTCCGAAACAGGTGCCAGTAGGGAGGTGGTGGTCTGTAAACACCTGCACGTC

TyrLeuTyrglyValGlySerSerIleAlaSerTrpAlaIleLysTrpGluTyrvValVal
2101 TACTTGTACGGGGTGGGTCAAGCATCGCGTCCCTGGGCCATTAAAGTGGGAGTACGTCGTT
ATGAACATGCCATGCCAACCCAGTTCGTAGCGCAGGACCCGGTAATTCACCCCTCATGCAGCAA

LeuLeuPheLeuLeuAlaAspAlaArgValCysSerCysLeuTrpMetMetLeuLeu
2161 CTCCTGTTCCCTCTGCTTGAGACGGGGCTCTGCTCCTGCTTGATGGATGCTACTC
GAGGACAAAGGAAGACCAACGTAAGCAGGGACGGAGGACGAACACCTACTACGATGAG

IleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAlaAlaSerLeuAla
2221 ATATCCAAGGGAGGGCTTTGGAGAACCTCGTAATACTTAATGCCAGCATCCCTGGCC
TATAGGGTTCCGCCAACCTCTGGGAGCATTTAGAATTACGTCGTAGGGACCGG

GlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrpTryrLeuLysgly
2281 GGGACCCACGGCTTGTATCCTTCGTTCTGCTTGCTATGGTATTGAAAGGGT
CCCTGGGTGCCAGAACATAGGAAGGAGCACAAAGAACGTACCAAACTCCCCA

LysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrpProLeuLeuLeuLeu
2341 AAGTGGGTGCCGGAGCCGGTCTACACCTCTGCTTCTGCTCCTGCTCCTG
TTCACCCACGGCCCTGCCAGATGTGGAAGATGCCAGTACCCGCTACACGGAGGACGAGGAC

FIG. 72H

LeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluValAlaAlaSerCysGlyGly
2401 TTGGCGTGTCCCCAGGGCGTACGGCTGGACACCGAGGTGGCCGGTGGTGGCGGT
AACCGCAACGGGGTGCCTGGCATGGCACCTGGCTCCACCGGCCAGCACACGGCCA

ValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrrTyryLysArgTyrIleSer
2461 GFTGTTCTCGTCGGGTGATGGCGCTGACTCTGTCACCATATTACAAGGCTATAATCAGC
CAACAAGAGCAGGCCAACTACCGGACTGAGACAGTGGTATAATGTTGGCATATAGTCG

TrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGluAlaGlnLeuHisvalTrp
2521 TGGTGCTTGTGGTGGCTTCACTATTCTGACCAAGACTGGCTCACCTTCGGCTTGACGTTGG
ACCACGAACACCACCGAACATAAAAGACTCATAAAGACTGGCTCACCTTCGGCTTGACGTTGGCACACC

IleProProLeuAsnValArgGlyGlyArgAspAlaValIleLeuMetCysAlaVal
2581 ATTCCCCCTAACGTCGGCCAGGGGGGCGACGCCCTCATCTTACTCATCTGCTGCTGTA
TAAGGGGGAGTTGCAGGCTCCCCGGCTGGCAGTAGAATGAGATACACAGACAT

HisProThrLeuValPheAspIleThrLysLeuLeuAlaValPheGlyProLeuTrp
2641 CACCCGACTCTGGTATTGACATACCAAATTGCTGGCTGGCGTCTGGGACCCCTTGG
GTGGGCTGAGACCATAAACCTGTAATGGTTAACGACGACCCGGAGAACGCTGGGAAACC

IleLeuGlnAlaSerLeuLeuLysValProTyrrPheValArgValGlnGlyLeuLeuArg
2701 ATTCTTCAAGCCAGTTGCTTAAGTACCCCTACTTTGCTGGCGTCCAAAGGCCTTCTCCGG
TAAGAAGTTGGTCAAAACGAATTTCATGGGATGAAACACGGCAAGGGTCCGGAAAGGGCC

FIG. 721

	PheCysAlaLeuAlaArgLysMetIleGlyHisTyrValGlnMetValIleIleLys
2761	TTCTGGCGTTAGCGGAAAGATGATCGGAGGCCATTACGTGCAAAATGGTCATCATTAAG
	AAGACCGCGCAATCGCCCTACTAGCCTCCGGTAATGCACGTTACCGTAGTAATTCA
2821	LeuGlyAlaIleThrGlyThrTyrValTyrAsnHisLeuThrProLeuArgAspTrpAla
	TTAGGGGGCCTTACTGGCACCTATGTTATAACCATTCTCACTCCTCTGGGACTGGCG
	AATCCCCGGGAATGACCGGTGAGATAAACATAATTGGTAGAGTGAGGAGAAGCCCTGACCCGC
	HisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPheSerGlnMetGlu
2881	CACAACGGCTTGGGAGATCTGGAGATCTGGCCGTGGCTGTAGAGCCAGTCGTCTCCCAAATGGAG
	GTGTTGCCGAACGGCTCTAGACCGGCACCGACATCTGGTCAGCAGAAAGAGGGTTACCTC
	ThrLysLeuIleThrTrpGlyAlaAspThrAlaAlaCysGlyAspIleIleAsnGlyLeu
2941	ACCAAGCTCATCACGTTGGGGCAGATAACCGCCGGTGCCTGACATCATCAACGGCTTG
	TGGTTCGAGTAGTGCACCCCCCGTCTATGGGGGGCACGCCACTGTAGTAGTTGCCGAAC
	ProValSerAlaArgArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSer
3001	CCTGTTCCGGCCGCAAGGGGGGGAGATACTGCTCGGCCAGGCCATGGAAATGGTCTCC
	GGACAAAGGGGGCGTCCCCGGCCCTATGACGAGCCCCGGTCCGCTACCTTACCAAGAGG
	LysGlyTrpArgLeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeu
3061	AAGGGGGTGGAGGGTTGCTGGGCCCATCACGGGTACGCCAGACAAGGGCCCTCCTA
	TTCCCCACCTCCAACGACCGGGGTAGTGCCTGCATGGGGTCTGTGTTCCCCGGAGGAT
	GlycylSleIleThrSerLeuThrGlyArgAspLysAsnGlnValGluValGln
3121	GGGTGCATAATTACCAAGCCTAAACTGGCCGTTACTGACCCGGCCCTGTTTGGTTACCTCCACTCCAGGT

FIG. 72J

3181	IleValSerThrAlaAlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThr ATTGTGTCAACTGCCAACCTCCTGGCAACGTCATCAATGGGGTGTGGACT TAACACAGTTGACGACGGGTTGGAAAGGACCGTACGTTACCCCACACGACCTGA
3241	ValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyProValIleGlnMet GTCTACCACGGGGCCGGAAACGGGACCATGGCTCCTGGTAGGCCAGTGGGTCCCCAGGACAGTAGGTCTAC CAGATGGTGCCTGGCTTGCTCCTGGTAGGCCAGTGGGTCCCCAGGACAGTAGGTCTAC
3301	TyrThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeu TATACCAATGAGACCAAGACCTGTGGCTGGCCGCTCCGCAAGGTAGGCCGCTACAGTAA ATATGGTTACATCTGGTCTGGAACACCCGACCGGAGGGCGTCCATGGCGAGTAAC
3361	ThrProCysthrCysGlySerSerAspLeuTyrLeuValThrArgHisAlaAspValIle ACACCCCTGCACCTGGCTCCTCGGACCTTACCTGGTCACGAGGCACGCCGATGTCATT TGTGGGACGTGAACGCCGAGGAGCCCTGGAAATGGACCACTGGCTCCGTGGCTACAGTAA
3421	ProValArgArgGlyAspSerArgGlySerLeuLeuSerProArgProlineSerTyr CCCGTGGCGGGGGTGATAGCAGGGCAGCCTGCTGTGCCCGCCATTTCCTAC GGGCACCGGGCCCACTATCGTCCCCGTCGGACAGCGACGGGGGGGTAAAGGATG
3481	LeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePhe TTGAAAGGCTCCTCGGGGGTCCGGCTGTGGCCGGCACGCCGTGGCATATT AACTTCCGAGGAGCCCCCAGGGACAACACGGGGCGCCGTGGCACCCGTATAAA
3541	ArgAlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIleProValGluAsn AGGGCCGGGTGTGGCACCCGGTGGAGTGGCTAAGGCCGGTGGACTTATCCCTGTGGAGAAC TCCCGGGCCACACGTGGCACCTCACCGATTCCGGACCTGTAAATAGGGACACCTCTG

FIG. 72K

LeuGluThrThrMetArgSerProValPheThrAspSerProSerSerProValValPro			
CTAGAGACAAACCATTGAGGTCCCCGGTGTTCACGGATAACTCCTCCACCAGTAGTGCC	3601	GATCTGTGGTACTCCAGGGCCACAAGTGCCATTGAGGAGGTGGTCAACCGGG	
GlnSerPheGlnValAlaHisLeuHisAlaProThrGlySerGlyLysSerThrLysVal	3661	CAGAGCTCCAGGTGGCTCACCTCCATGCTCCACAGGCAGCGGAAAAGCACCAAGGTC	GTCTCGAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGTGCCGTGGTCCAG
ProAlaAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeuAsnProSerValAlaAla	3721	CGGGCTGCATATGCAGGCTATAAGGTGCTAGTACTCAACCCCTCTGTGCTGCA	GGCGAACGTATAACGTGGAGTCCCAGATTCCACGATCATGACTGAGTTGGGAGACAACGACGT
ThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThr	3781	ACACTGGCTTGGTTACATGTCCAAGGCTCATGGATACATCCTAACATCAGGACC	TGTGACCCGAACACGAATGTACAGGTCCGAGTAGCTAGGATTGTAGTCCTGG
GlyValArgThrIleThrThrThrTyrSerProIleThrTyrSerThrTyrGlyLysPheLeu	3841	GGGGTGAGAACAAATTACCACTGGGGGGCCTATGACATAATACTACCGTACTCCACCTACCGTGGGATGCGTGGATGCCAGGAA	CCCCACTCTGTTAATGGTGAACCGTGGGTAGTGCATGAGGTGGATGCCAGGAA
AlaAspGlyGlyCysSerGlyGlyAlaIleAspIleIleCysAspGluCysHisSer	3901	GCCGACGGCGGGTGGCTCGGGGGGGCTTATGACATAATACTGGCAAGTTCCTCC	CGGCTGGCGCCACGAGCCCCCGCGAATAACTGTATTAAACACTGCTCACGGTGGAGG

FIG. 72L

FIG. 72M

MetThrGlyTyrThrGlyAspPheAspSerValIleAspCysasnThrCysValThrGln
4321 ATGACCGGCTATCCGGGACTTCGACTCGGTAGACTGCAATACTGTGTCACCCAG
TACTGGCCGATATGCCGCTGAAGCTGACGTTATGCACACAGTGGTC

ThrValAspPheSerLeuAspProThrPheThrileGlutThrileLeuProGlnasp
4381 ACAGTCGATTCCAGCCTGACCCTCACCATGGAGACAATCACGCTCCCCCAGGAT
TGTCAAGTCGGAAGTGGATGGAACTCTGTACTGCGAGGGTCTTA

AlaValSerArgThrGlnargargGlyArgThrGlyArgGlyLysProGlyIleTyrarg
4441 GCTGCTCCCGCACTCACGTGGGCAAGGACTGGCAGGGGAAGCCAGGCATCTACAGA
CGACAGAGGGCTGAGTTGCAGCCCCCTCGCTGACCGTCCCCCTCGGTCCGTTAGATGCT
PheValAlaProGlyGluArgProSerGlyMetPheAspSerSerValIleCysGluCys
4501 TTGTGGCACGGGGAGCCCTCGGCATGTCGACTCGTCCGTCCTCTGTGAGTGC
AACACCGCTGGCCCTCGGGGAGGCCGTACAAGCTGAGCAGGCAGGAGACACTCACG

TyraspalaGlycysalaTrpTyrGluLeuThrProAlaGluThrThrValArgIeuaArg
4561 TATGACCGAGGCTGTGCTTGTTATGAGCTCACGCCGCCAGACTACAGTTAGGCTACGA
ATACTGGCTCCGACACGAAACCATACTCGAGTGGGGCTCTGATGTCATCCGATGCT

AlaTyrMetAsnThrProGlyLleProValCysGlnAspHisIleuGluPheTrpGluGly
4621 GCGTACATGAACACACCCCCGGCTCCCGTGTGCCAGGACCATCTGAATTGGAGGGC
CGCATGTAATTGGGGCCCGAAGGGCACACGGCCTGGTAGAACTTAAACCCCTCCCCG

ValPhethrGlyLeuThrhisIleAspalaHisPheLeuSerGlnThrLysGlnSerGly
4681 GTCTTTACAGGCTCACTCATATAGATGCCACTTCTATCCAGACAAAGCAGAGGG
CAGAAATGTCGGAGTGAAGTATCTACGGGTGAAGATAGGGTCTGTTCGTCTCACCC

FIG. 72N

4741	GluAsnLeuProTyrlLeuValAlaTyryrglnAlaThrvalCysAlaArgAlaGlnAlaPro	CTCTGGAAAGGAATGGACCATGGCATGGTCCGGACACCGCATCCCCGAGTTGGGGA
4801	ProProSerTrpAspGlnMetTrpLysCysIleArgLeuIleArgLeuIleAspSerGly	CCCCCATCGTGGACCCAGATGTGGAAAGTGTGATTGCCCTCAAGCCCACCCCTCCATGGG
4861	ProThrProLeuIleUtyrArgLeuGlyAlaValGlnIasnGluIleThrLeuThrHisPro	CCAACACCCCTGCTATACAGACTGGCGCTGTTCAGAAATGAAATCACCCCTGACGGCACCCA
4921	ValThrLysTyrIleMetThrCysMetSerAlaAspLeuGluValValThrSerThrTrp	CAGTGCTTTATGTAGTACTGTACGTACAGCCGGCTGACCTCCAGCAGTGGACTGCTCGTGGACC
4981	ValLeuValGlyGlyValLeuAlaAlaAlaIleCysLeuSerThrGlyCysVal	GTGCTCGTTGGCGCTGGCTTGCCTGGCGTATTGCCTGTCAACAGGCTGCGTG
5041	ValIleValGlyArgValValLeuSerGlyLysProAlaIleIleProAspArgGluVal	CACGAGCAACGGCCGACGGACCGAACCAGGACATAACGGACAGTTGTCGGACGCAC
5101	LeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGln	CTCTACCCGAGAGTTCGATGAGATGGAAAGAGTGCTCTCAGGCACTTACCGTACATCGAGCAA
		GAGATGGCTCTCAAGCTTAACCTTCTCACGAGAGTCGTGAATGGCATGTAGCTCGTT

FIG. 720

FIG. 72P

5521 SerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGlyTyrGlyAlaGlyValAla
 ACTGTTGGACTGGGTCTCATAGACATCCTTGCAAGGGTATGGCGGGCGTGGCG
 TCACAAACCTGACCCCTTCAGGACTATCTGTAGAACGTTCCCATAACGGCCCCACCGC

5581 GLYAlaLeuValAlaPheLysIleMetSerGlyGluValProSerThrGluAspLeuVal
 GGAGCTCTGTGGCATTCAAAGATCATGACCGGTAGGTCTAGTACTGCCACTCCAGGGAGGTGCCTCCTGGACCCAG

5641 AsnLeuProAlaIleLeuSerProGlyAlaLeuValValGlyValValCysAlaAla
 AATCTACTGCCGCCATCCTCTCGTAAGTCTAGTACTGCCACTCCAGGGAGGTGCCTCCTGGACCCAG

5701 IleLeuArgArgHisValGlyProGlyGluValAlaValAlaGlnTrpMetAsnArgLeuIle
 ATACTGGGGCACGTTGGGGGGCAGTGCAGTGGATGAACCGGGCTGATA
 TATGACGGGGCTGGCAACCGGGGGCTCCCCCGTCACTGTCAACCTACTTGGCCGACTAT

5761 AlaPheAlaSerArgGlyAsnHisValSerProThrHistYrValProGluSerAspAla
 GCCTTCGGCCTCCCCGGAAACCATGTTCCCCACGGCACTACGTGCCAGTGGAGAGCCGATGCA
 CGGAAGCGGGCCCCCTGGTACAAGGGGGTGTGATGCACGGCCTCTGGCTACGT

5821 AlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeu
 GCTGCCCGCGTCACTGCCATACTGCAAGCAGCTCAGTAAACCCAGCTCCTGAGGGACTCCGCTGAC

FIG. 72Q

		HisGlnTrpIleSerGluCysThrProCysSerGlySerTrpLeuArgAspIle
5881	CACCACTGGATAAGCTCGGACTGTACACTCCATGCTCCGGCTTAAGGGACATC GTGGTCACCTATTGAGCCTCACATGGTAGGTACGGGAAAGGACCGATTCCCTGTAG	
5941	TGGGACTGGATAATGCCGAGGTGTGAGCGACTTTAACGACCTGGCTAAAGCTAAC ACCCTGACCTATAACGCTCCACAACTCGCTGAATTCTGGACCGATTTCGAGTAGTAC	
6001	ProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyrylSGLyValTrpArg CCACAGCTGCCATTGGGATCCCCCTTGTGTCCAGCGCGGGTATAAGGGGTCTGGCGA GGTGTGACGGGACCCCTAGGGAAACACAGGACGGTGGCCATATTCCCCAGACCGCT	
6061	ValAspGlyIleMethionThrArgCysHisCysGlyAlaGluIleThrGlyHisValLys GTGGACGGCATCATGCCACACTCGCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAA CACCTGCCGTAGTACCTGACTCGACTCTAGTGACCTGACTGTGACCTGTACAGTT	
6121	AsnGlyThrMetArgIleValAlanylProArgThrCysArgAsnMetTrpSerGlyThrPhe AACGGGACGATGAGGATCGTGGCTTAGGACCTGCAGGAACATGTGGAGTGGGACCTC TTGCCCTGCTACTCCTAGCAGGCCAGGATCCTGGACCTGTACACCTCACCCCTGGAAAG	
6181	ProlleAsnAlaTyrThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPhe CCCATTAAATGCCCTACACCACGGGGCCCTGTACCCCCCTTCTGGCGCCGAACATCACACGTT GGGTAATTACGGATGTGGTGGCCGGGACATGGGGGAAGGACGGGGCTGTGATGTGCAAG	

FIG. 72R

AlaLeuTrpArgValSerAlaGluGluTyrValGluIleArgGlnValGlyAspPheHis
6241 GCGCTATGGAGGGTGTGCAGAGGAATATGGAGATAAGGCAGGTGGGGACTTCCAC
CGCGATAACCTCCCACAGACGTCTCCTTACACCTCTATTCCGTCCACCCCTGAAGGTG
TyrValThrGlyMetThrThrAspAsnLeuLysCysProCysGlnValProSerProGlu
6301 TACGTGACGGGTATGACTACTGACAATCTCAAAATGCCCGTGCCAGGTCCATGCCCGAA
ATGCACTGCCATACTGATGACTGTTAGAGTTACGGCACGGTCCAGGGTAGGGCTT
PhePheThrGluLeuAspGlyValArgLeuHisArgPheAlaProProProCysLysProLeu
6361 TTTTCACAGAACATTGGACGGGGTGCGCTACATAGGTTGCGCCCCCTGCAAGCCCTTG
AAAAGTGTCTAACCTGCCCCACGCGGATGTATCCAACCGGGGGGACGTTGGGAAAC
LeuArgGluGluValSerPheArgValGlyLeuHisGluTyrProValArgLysProLeu
6421 CTGCGGGAGGAGGTATCATTCAGAGTAGGACTCCACGAATACCGGTAGGGTGCACATTAA
GACGCCCTCCTCCATAGTAAGTCTCATCCTGAGGTGCTTATGGCCATCCCAGCGTTAAT
ProCysGluProGluProAspValAlaValLeuThrSerMetLeuThrAspProSerHis
6481 CCTTGCGAGCCGAACCGGACGTTGGCGTGTGACGTCCATGCTCACTGATCCTCCCAT
GGAACGCTCGGGCTTGGCCTGCAACGGCACAACGTGCAAGGTACGGAGTGACTAGGGAGGGTA
IleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySerProProSerValAlaSer
6541 ATAACAGCAGAGGGGGGGGGGAAGGTTGGCGAGGGATCACCCCCCTCTGTGGCCAGC
TATTGTCGTCTCCGGGGGGGGGGCTTCCAACCGCTCCCTAGTGGGGGGAGACACCGGTGCG

FIG. 72S

6601	SerSerAlaSerGlnLeuSerAlaProSerAlaThrCysThrAlaAsnHisAsp TCCTCGGCTAGCCAGCTATCCATCTCAAGGCCAACTTGCACCGCTAACCATGAC AGGAGCCGATCGGTAGGGTAGAGAGTTCGGTGAACGTGGGATTGGTACTG
6661	SerProAspAlaGluIleGluAlaAsnLeuLeuTrpArgGlnGluMetGlyGlyAsn TCCCCGTATGGCTCATAGAGGCCAACCTCCATGGAGGAGATGGGGCAAC AGGGGACTACGACTCGAGTATCTCGGTGGAGGATAACCTCCGGTCTACCCGGCTTG
6721	IleThrArgValGluSerGluAsnLysValValIleLeuAspSerPheAspProLeuVal ATCACCGGGTTGAGTCAGTCAGTCTTTGTTCACTAAGACCTGAGGAAGCTAGGGCTAGGGCAACAC TAGTGGTCCCAACTCAGTCTTTGTTCACTAAGACCTGAGGAAGCTAGGGCTAGGGCAACAC
6781	AlaGluGluAspGluArgGluIleSerValProAlaGluIleLeuArgLysSerArgArg GGGGAGGGAGCAGCGGGAGATCTCCGTACCCGAGAAATCCTGGGAAGTCTGGAGA CGCCCTCCTGGCTCGCCCTCTAGGGCATGGGCATTTAGGACGGCCTCAGAGCCCTCT
6841	PheAlaGlnAlaLeuProValTrpAlaArgProAspTyrosProAsnProProLeuValGluThr TTCGCCAGGCCCTGGCCGGGGGGACTATAACCCCCGGCTAGTGGAGAGC AAGGGGTCCGGGACGGGAAACCCGGGACGGGAAACCCGGGACGGGAAACCCGGG
6901	TrpLysLysProAspTyrgluProProValValHisGlyCysProLeuProProProLys TGGAAAAAGCCCCGACTACCAACCACCTGGTCCATGGCTGTCCGGCTTCCACCTCCAAG ACCTTTTCGGCTGATGCTGGGACACCCGGTACCGGACAGGGACAGGGAAAGGTGGAGGTTTC
6961	SerProProValProProArgLysLysArgThrValValLeuThrGluSerThrLeu TCCCTCCCTGGCTCCGCCCTCGGAAGAGCGGACGGGAGGCCCTTCACTGAATCAACCCCTA AGGGGAGGGACACGGGAGGGGGAGGCCCTTCACTGGCCTGGCACCAGGAGTGACTTAGTTGGGAT

FIG. 72T

SerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSerSerThrSerGlyIle
7021 TCTACTGCCCTGGCCGAGCTCGCCACCGAGAAGCTTGCGAGCTCCTCAACTTCCGGCAT
AGATGACGGAACCGGCTCGAGCGGTGGCTTGAAACCGTCGAGGAGTTGAAGGCCGTA

ThrGlyAspAsnThrThrThrSerSerGluProAlaProSerGlyCysProProAspSer
7081 ACGGGGACAATACGACACATCCTCTGAGCCCCTCTGGCTGGCCCCCGACTCC
TGCCCCGCTGTATGCTGTGTAGGAGACTCGGGGGGAAGAACCGACGGGGGCTGAGG

AspAlaGluSerTyrSerSerMetProProLeuGluGlyGluProGlyAspProAspIle
7141 GACGCTGAGTCCTATTCTCCATGCCCTGGAGGGAGCCTGGGATCCGGATCTT
CTGGCACTCAGGATAAGGAGGTACGGGGGGACCTCCCGCTCGGACCCCTAGGCCTAGAA

SerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGluAspValValCysCys
7201 AGCGACGGGTCACTGGTCAACGGTCAGTAGTGAGGCCAACGCCGGGAGGATGTCGTGCTGC
TCGCTGCCAGTACCACTGGCCAGTCATCACTCCGGTGGCCTCCTACAGCACACGACG

SerMetSerTyrSerTrpThrGlyAlaLeuValThrProCysAlaAlaGluGluGlnLys
7261 TCAATGCTTACTCTGGACAGGCCACTCGTCACCCCGTGGCCGGAAAGAACAGAAA
AGTTACAGAACGAACTGTCCGGTGAGCAGTGGGCACGGGGCCTCTCTGTCTT

LeuProIleAsnAlaLeuSerAsnSerLeuLeuArgLysIleAsnLeuValTyrSerThr
7321 CTGCCCATCAATGCACTAACGAACTCGTTGCTACGTCACCACATTGGTGTATTCCACC
GACGGGTAGTTACGTCATTGCAACGATGCCAGTGGTGTAAACCACATAAGGTGG

FIG. 72U

7381 ThrSerArgSerAlaCysGlnArgGlnLysValThrPheAspArgLeuGlnValLeu
ACCTCACGCAGTGCTGCCAAAGGCAGAAGAACATTGACAGACTGCAAGTCTG
TGGAGTGCCTCACGAACCGTTCCGTCTCTTCAGTGTAAACTGTCTGACGTTCAAGAC

7441 AspSerHistYrGlnAspValLeuLysGluValLysAlaAlaAlaSerLysValLysAla
GACAGCCATTACCAAGGACGTACTCAAGGAGTTAAAGCAGCGCGTCAAAGTGAAGGCT
CTGTCGGTAATGGTCATGAGTTCCCTCCAATTCTGTCGCCAGTTCACTCCGA

7501 AsnLeuLeuSerValGluGluAlaCysSerLeuThrProProHisSerAlaLysSerLys
AACTTGCTATCCGTAGAGGAAGCTTGCGACGCCACACTCAGCCAATCCAAG
TTGAACGATAGGCATCTCCTCGAACGGTGGACTGGGGGTGTGAGTCGGTTAGGTC

7561 PheGlyTyrglyAlaLysAspValArgCysHisAlaArgLysAlaValThrHisIleAsn
TTTGTTATGGGCCAAAGACGTCGTTGCCATGCCAGAACGGCGTAACCCACATCAC
AAACCAATACCCCGTTCTGCCAGGCAACGGTACGGTCTTCCGGCATGGGTAGTGTG

7621 SerValTrpLysAspLeuLeuGluAspAsnValThrProIleAspThrThrIleMetAla
TCCGTGTGAAAGACCTTCTGGAAGACAATGTAACACCAATAGACACTACCACATGGCT
AGGCACACCTTCTGGAAGACACCTTCTGTACATGTGGTTATCTGTGATGGTAGTACCGA

7681 LysAsnGluValPheCysValGlnProGluLysGlyGlyArgLysProAlaArgLeuIle
AAGAACGAGGTTCTGCCGTCAAGCCTGAGAAGGGGGTCGTAAGGCCAGCTCGTCTCATC
TTCTTGCTCCAAAAGACGCCAGTCCGACTCTCCCCCAGCATCGGTGGAGAGAGTAG

7741 ValPheProAspLeuGlyValArgValCysGluLysMetAlaLeuTyraspValValThr
GTTGTTCCCCGATCTGGGGTGGGAAAGATGGCTTGTACGACGTTGTTACA
CACAGGGGCTAGACCCGCACGCCACACGCTTTCTACCGAACATGCTGCACCAATGT

FIG. 72V

LysLeuProLeuAlaValMetGlySerSerTyrGlyPheGlnTyrSerProGlyGlnArg
7801 AAGCTCCCTTGCCCGATGGGAAGCTCCTACGGATCCAATACTCACCGACACCGG
TCGAGGGAAACCGGCACTACCCTCGAGGATGCCTAAGGTATGAGCTGGTCTGTCGCC

ValGluPheLeuValGlnAlaTrpLysSerLysLysThrPrometGlyPheSerTyrAsp
7861 GTTGAATTCTCGTGCAAGCGTGGAAAGTCCAAGAAAACCCAAATGGGTTCTCGTATGAT
CAACTTAAGGAGCACGTTCGCACCTTCAGGTCTTGGGTTACCCCAAGAGCATACTA

ThrArgCysPheAspSerThrValThrGluUserAspIleArgThrGluGluAlaIleTyr
7921 ACCCGCTGCTTGACTCCACAGTCAGTGACTCTCGCTGTAGGCATGCCCTCCGGTTAGATG
TGGCGACGAACTGAGGTGTCACTGAGAGCCACATCCGTACGGAGGGCAATCTAC

GlnCysCysAspLeuAspProGlnAlaArgValAlaIleLysSerLeuThrGluArgLeu
7981 CAATGTTGTGACCTCGACCCCCAAGCCCGCTGCCATCAAGTCCTCACCGAGAGGCTT
GTTACAACACTGGAGCTGGGGTTCGGGGCCACCGGTAGTTCAAGGGAGTGGCTCTCCGAA

TyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnCysGlyTyrArgArgCysArg
8041 TATGTTGGGGCCCTCTTACCAATTCAAGGGGAGAACTGCGGCTATCGCAGGTGCCGC
ATACAACCCCCGGAGAACGGTTAAGTTCCCCCTCTGACGCCGATAGCGTCCACGGCG

AlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCystyrIleLysAlaArg
8101 GCGAGCGCGCGTACTGACAACTAGCTGTGGTAACACCCCTCACTTGCTACATCAAGGCCCG
CGCTCGCCGATGACTGTGATCGACACCAATTGGGAGTGAACGGATGTAGTCCGGGCC

FIG. 72W

AlaAlaCysArgAlaAlaGlyIleuGlnAspCysthrMetLeuValCysGlyAspAspIleu
8161 GCAGCCTGTCGAGCCGAGGGCTCCAGGAATGCACCATGCTCGTGTGGCGACGACTTA
CCTCGGACAGCTGGCTTCCGGAGGTCTGACGTGGTACCGACACACCGCTGCTGAAT

ValValIleCysGluSerAlaGlyValIleGluAspAlaAlaSerLeuargAlaPheThr
8221 GTCGTTATCTGTGAAAGCGGGGGTCCAGGAGCGGGGAGCCCTGGGGGTGTTGGTCTTATGCTGAAC
CAGCAATAGACACTTGGCCCCCAGGT CCTCCTGGCCGCTCGGACTCTCGGAAGTGC

GluAlaMetThrArgTyrSerAlaProProGlyAspProProGlnProGlutYrasPleu
8281 GAGGCTATGACCAGGTACTCCGGCCCCCTGGGGACCCCCACAACCAAATACGACTTG
CTCCGATACTGGTCCATGAGGGGGGGACCCCTGGGGGTGTTGGTCTTATGCTGAAC

GluLeuIleThrSerCysSerSerAsnValSerValAlaHisAspGlyAlaGlyLysArg
8341 GAGCTCATAACATCATGCCAACGTTCACTGGCCACAGACGGGCTGGAAAGAGG
CTCGAGTATTGTTAGGAGGGTGCACAGTCAGGGGTGCTGCCGCGACCTTCTCC

ValTyTyrlLeuThrArgAspProThrThrProLeuAlaArgAlaAlatrpgLuThrAla
8401 GTCTACTACCTCACCCGGTGACCCCTACACCCCCCTCGCGAGAGCTGGTGGGAGACAGCA
CAGATGATGGAGGTGGCACTGGGATGTTGGGGGAGGGCTCTGACGCACCCCTCTGTCGT

ArgHisthrProValAsnSerTrpLeuGlyAsnIleIleMetPheAlaProThrLeuTrp
8461 AGACACACCTCCAGTCATACTGGCTAGGCCACATAATCATGTTGCCCAACTGTTG
TCTGTGTGAGGTCAAGGACCGATCCGTTGTATTAGTACAAACGGGGTGTGACACC

FIG. 72X

AlaArgMetIleLeuMetThrHisPhePheSerValLeuIleAlaArgAspGlnLeuGlu
8521 GCGAGGATACTGATGCCATTCTTAGCGCCTTATGCCAGGGACCGCTTGAA
CGCTCCTACTATGACTACTGGGTAAAGGAATCGCAGGAATCGGTCCCTGGTCGAACCT

GlnAlaLeuAspCysGlnIleTyrGlyAlaCysTyrSerIleGluProLeuAspLeuPro
8581 CAGGCCCTCGATTGGAGATCTACGGGCCTGCTACTCCATAGAACCACTTGATCTACCT
GtCCGGGAGCTAACGCTCTAGATGCCCGGACGATGAGGTATCTGGTGAACTAGATGGA

ProIleGlnArgLeuHisGlyLeuSerAlaPheSerLeuHisSerTyrSerProGly
8641 CCAATCATTCAAAGACTCCATGGCCTCAGGCCATTCTCACAGTTACTCTCCAGGT
GGTTAGTAAGTTCTGAGGTACCGGAGTCGGCTAAAGTGAGGTGTCAAATGAGAGGTCCA

GluIleAsnArgValAlaAlaCysLeuArgLysLeuGlyValProProLeuArgAlaTrp
8701 GAAATAATAGGGTGGCCGATGCCTCAGAAACTTGGGTACCGCCCTGCGAGCTTGG
CTTAATTATCCCCACCGGGTACGGAGTCTTGAACCCCATTGGGGAACGCTCGAAC

ArgHisArgAlaArgSerValArgAlaArgLeuIleAlaArgGlyGlyArgAlaAlaIle
8761 AGACACCGGGCCGGAGCGCTCCGGCCTAGGCTTCTGGCCAGGGAGGCAGGGCTGCCATA
TCTGTGGCCGGCCCTCGCAGGCCGATCCGAAGACCGGTCTCCTCCGCCCCGACGGTAT

CysGlyIleTyrIlePheAsnTrpAlaValArgThrLysLeuThrProIleAla
8821 TGTGGCAAGTACCTCTCAACTGGCAGTAAGAACAAAGCTCAACTCACTCCATAGCG
ACACCGTTCATGGAGAAGTTGACCCGTCATTCTGGTTCGAGTTGAGGTATGCC

FIG. 72Y

AlaAlaGlyGlnIleAspLeuSerGlyTyrPheThrAlaGlyTyrSerGlyGlyAspIle
8881 GCCGCTGGCCAGGTGGACTTGTCGGCTGGTTCAACGGCTGGCTACAGGGGGAGACATT
 CGGCACGGGTGACCTGAACAGGCCGACCAAGTGCCGACCGATGTCGCCCTCTGTAA

TyrHisSerValSerHisAlaArgProArgTrpIleTrpPheCys
8941 TATCACAGGGTGTCTCATGCCGGCCCCGCTGGATCTGGTTTGCCC
 ATAGTGTGGCACAGTAGTACGGCCGGGGGACCTAGACCAAAACGGG

1 GluPheGlyS rValIleProThrSerGlyAspValValValValAlaThrAspAlaLeu
 GAATTGGGTCCGTACCCGACCAGCGCGATTTGTCGTGGCAACCGATGCCCTC
CTTAAGCCCAGGCAGTAGGGCTGGTCGCCGCTACAACAGCAGCACCGTTGGCTACGGGAG
 1 ECOR1, 7 NLALV, 8 AVA2 SAU96, 15 FOK1, 24 NSPB11, 26 FNU4H
 1, 52 SFAN1, 57 MNLL, 60 NLAL11,
 61 MetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsnThrCysValThrGln
 ATGACCGGCTATACCGGCGACTCGACTCGGTGATAGACTGCAATACGTGTGTCACCCAG
TACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACGTTATGCACACAGTGGGTC
 65 HPA11, 74 HPA11, 83 TAQ1, 85 HINF1, 90 HPH, 106 AFL111 MA
 E2, 112 MAE3, 113 HPH,
 121 ThrValAspPheSerLeuAspProThrPheThrIleGluThrIleThrLeuProGlnAsp
 ACAGTCGATTCAGCCTTGACCCTACCTCACCATGAGACAATCACGCTCCCCAAGAT
TGTCAGCTAAAGTCGGAACTGGGATGGAAAGTGGTAACTCTGTTAGTGCGAGGGGGTTCTA
 125 TAQ1, 149 HPH, 178 SFAN1,
 181 AlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArg
 GCTGTCTCCCGCACTAACGTGGGGCAGGACTGGCAGGGGAAGCCAGGCATCTACAGA
CGACAGAGGGCGTGAGTTGCAGCCCCGTCCCTGACCGTCCCCCTCGGTCTAGATGTCT
 198 MAE2, 226 ECOR11 SCRF1, 230 SFAN1,
 241 PheValAlaProGlyGluArgProProAlaCysSerThrArgProSerSerValSerAla
 TTTGTGGCACCGGGGGAGCGCCCTCCGGCATGTTGACTCGTCCGTCTGTGAGTGCC
AAACACCGTGGCCCCCTCGCGGGAGGCCGTACAAGCTGAGCAGGCAGGAGACACTCACGG
 246 BAN1 NLALV, 250 HPA11 NC11 SCRF1, 257 HAE11, 258 HH11, 2
 62 MNLL, 265 HPA11, 268 NSPC1, 269 NLAL11, 274 TAQ1, 276 HIN
 F1, 287 MNLL, 296 BSP1286,
 301 ArgIle
 CGAATTG
GCTTAAG
 302 ECOR1,
 361

FIG. 74

FIG. 75

Overlap with 6k

Tyr His Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu Ala
1 TTATCACAGCGTGTCTCATGCCCGCCCCGGCTGGATCTGGTTTGCCCTACTCCTGCTTGC
AATACTGTCGCACAGAGTACGGCCGACACTAGACCAAAACGGATGAGGACGAACG

Ala G1y Val Gly Ile Tyr Leu Leu Pro Asn Arg OP
61 TGCAGGGGTAGGCATCTACCTCCCACCCGATGAAAGGTGGGTAAACACACTCCGGCC
ACGTCCCCCATCCGTAGATGGAGGGGTGGCTACTTCCAACCCCATTTGTGAGGCCGG

121 T
A

FIG. 76

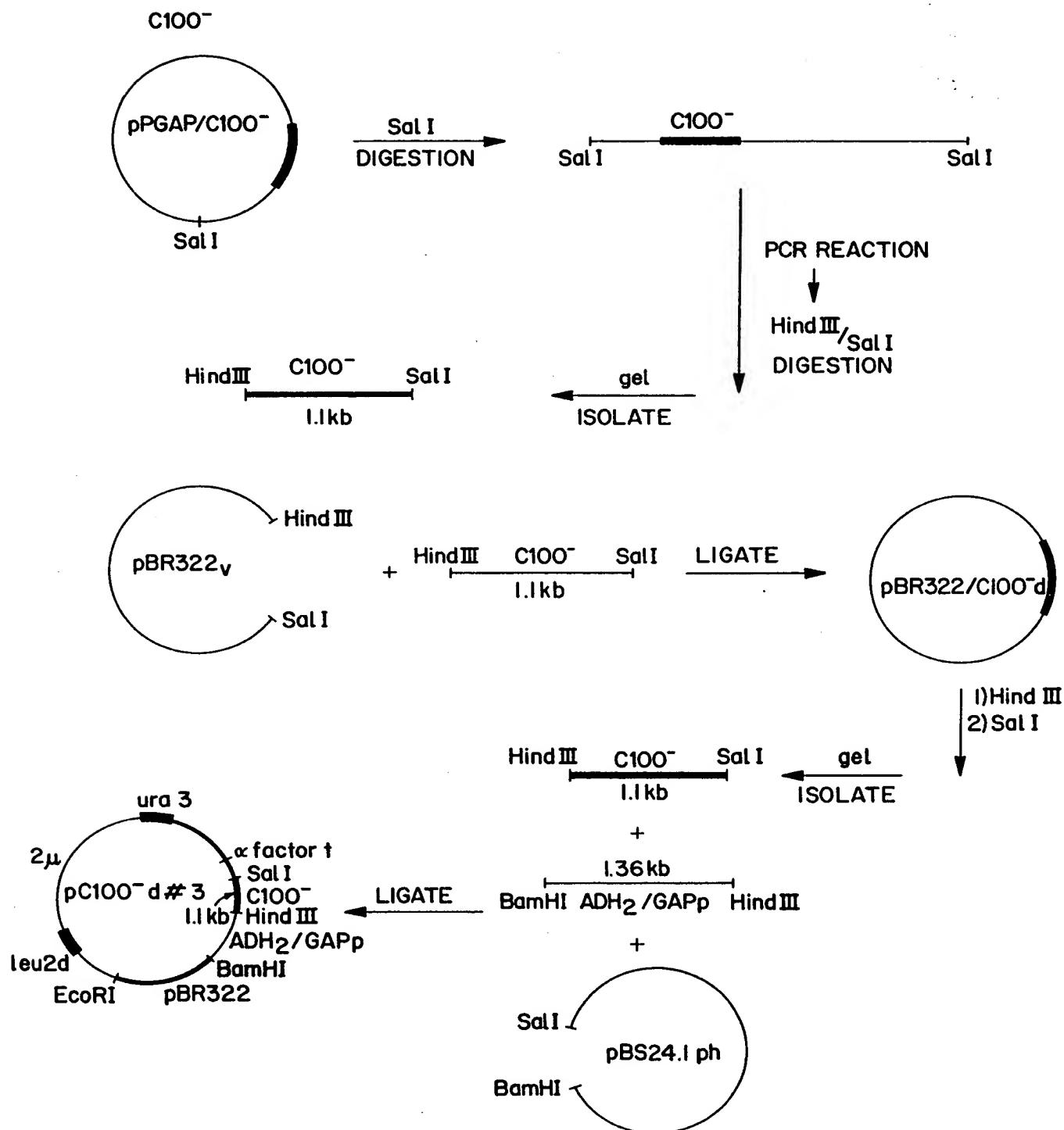


FIG. 77

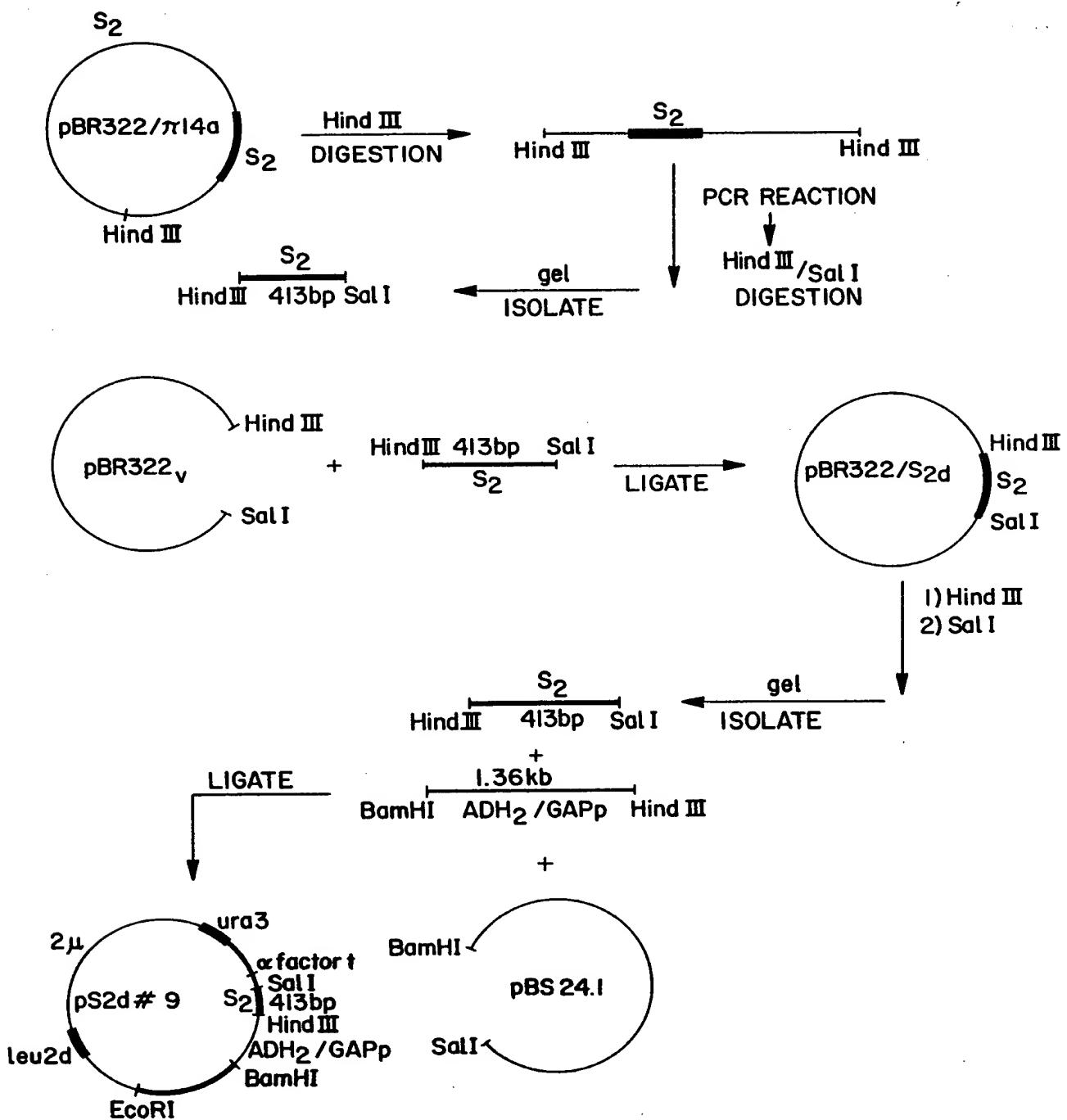


FIG. 78

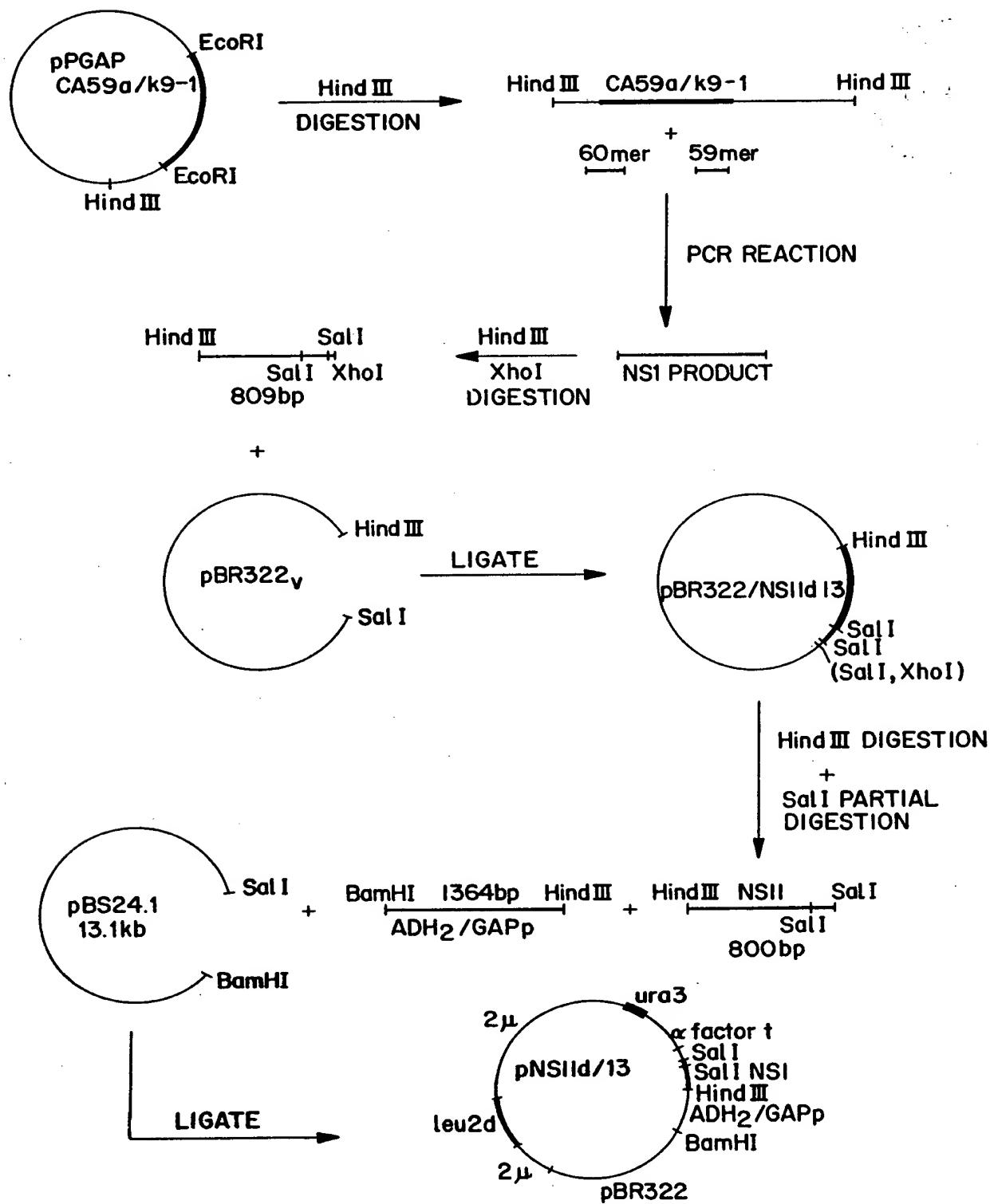


FIG. 79A

2 AlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPheThr
 GCGGTGGACTTATCCCTGTGGAGAACCTAGAGACAAACCATGAGGTCCCCGGTGTTCACG
 CGCCACCTGAAATAGGGACACCTCTGGATCTCTGGTACTCCAGGGGCCACAAGTGC
 29 MAE1, 40 NLA111, 43 MNLL, 45 AVA2 NLAIV SAU96, 49 NCIL SC
 RF1, 50 HPA11,
 62 AspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaPro
 GATAACTCCTCTCCACCAGTAGTGCCCCAGAGCTTCCAGGTGGCTCACCTCCATGCTCCC
 CTATTGAGGAGAGGTGGTCATCACGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGG
 69 MNLL, 83 BSP1286, 92 ALU1, 97 ECOR11 SCRFL, 106 HPH, 109
 MNLL, 113 NLA111,
 122 ThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysVal
 ACAGGCAGCGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTG
 TGTCCCGTCGCGTTTCGGGTTCCAGGGCCGACGTATACGTCGAGTCCCGATATTCCAC
 126 BBV FNU4H1, 127 NSPB11, 129 FNU4H1, 145 AVA2 NLAIV SAU96
 , 148 NCIL SCRFL, 149 HPA11, 152 BBV FNU4H1, 156 NDE1, 161 B
 BV FNU4H1, 163 ALU1, 165 DDE1,
 182 LeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAla
 CTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTGGTGTACATGTCCAAGGCT
 GATCATGAGTTGGGGAGACAACGACGTTGTACCCGAATGTACAGGTCCGA
 182 MAE1, 184 SCAL, 185 RSA1, 195 MNLL, 203 BBV FNU4H1, 228
 AFL111 NSPC1, 229 NLA111,
 242 HisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIle
 CATGGGATCGATCCTAACATCAGGACGGGGGTGAGAACAAATTACCACTGGCAGCCCCATC
 GTACCCCTAGCTAGGATTGTACCCCTGGCCCACTTTGTTAATGGGTACCGTCGGGT
 242 NLA111, 246 BIN1, 247 MBO1 SAU3A, 248 CLA1, 249 TAQ1, 25
 1 BIN1 MBO1 SAU3A, 264 AVA2 SAU96, 267 HPA11 NCIL SCRFL, 271
 HPH, 291 BBV FNU4H1,
 302 ThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAsp
 ACGTACTCCACCTACGGCAAGTCCCTTGCCGACGGCGGGTGCTCGGGGGCGCTATGAC
 TGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCCCACGAGCCCCCGGAAACTGT
 302 MAE2, 304 RSA1, 340 BSP1286 HGIA, 343 AVA1, 350 HAE11, 3
 51 HHA1,
 362 IleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThr
 ATAATAATTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTGGGCATTGGCACT
 TATTATTAAACTGCTACGGGTGGCTACGGGTTAGGTAACCGGT
 372 MAE3, 391 FOK1, 392 SFAN1, 399 FOK1,
 422 ValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrPro
 GTCCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCCT
 CAGGAACTGGTTCGTCCTGTACGCCCCCCGCTGTACCAACCGAGCGGTGGCGGTGGGA
 431 TTHIII2, 435 ALWN1, 461 BSP1286 HGIA, 479 MNLL,

FIG. 79B

482 ProGlySerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGly
 CCGGGCTCCGTCACTGTCCCCATCCAACATCGAGGAGGTTGCTCTGTCACCACCGGA
GGCCCGAGGCAGTGACACGGGTAGGGTTGTAGCTCCCAACGGACAGGTGGTGGCCT
 482 HPA11 NC11 SCRF1, 484 BAN11 BSP1286, 485 NLA1V, 491 MAE3
 , 497 BSP1286, 503 FOK1, 513 TAQ1, 515 MNLL1, 518 MNLL1, 537 H
 PA11,
 542 GluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeu
 GAGATCCCTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCTC
CTCTTAGGGAAAATGCCGTTCCGATAGGGGGCTTCATTAGTCCCCCCTGTAGAG
 543 XHO2, 544 BIN1 MBO1 SAU3A, 571 MNLL1, 573 TAQ1,
 602 IlePheCysHisSerLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGly
 ATCTTCTGTCATTCAAAGAAGAAGTGCAGCAACTCGCCGCAAAGCTGGTCGCATTGGC
TAGAAGACAGTAAGTTCTCACGCTGCTTGAGCGCGTTCGACCAGCGTAACCCCG.
 603 MBO11, 619 MBO11, 638 FNU4H1, 645 ALU1, 660 SFAN1,
 662 IleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAsp
 ATCAATGCCGTGGCCTACTACCGCGTCTTGACGTCCGTATCCGACCAGCGGCAT
 TAGTTACGGCACCGGATGATGGCGCCAGAACTGCACAGGCAGTAGGGCTGGTGCCGCTA
 672 HAE1, 673 HAE111, 682 NSPB11 SAC2, 683 THA1, 693 AFL111
 MAE2, 703 FOK1, 712 NSPB11, 714 FNU4H1,
 722 ValValValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerVal
 GTTGTCTCGTGGCAACCGATGCCCTCATGACCGGCTATACCGCGACTTCGACTCGGTG
 CAACAGCAGCACCGTTGGGTACGGAGTACTGGCCGATATGGCCGCTGAAAGCTGAGCCAC
 740 SFAN1, 745 MNLL1, 748 NLA111, 753 HPA11, 762 HPA11, 771 T
 AQ1, 773 HINF1, 778 HPH,
 782 IleAspCysAsnThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThr
 ATAGACTGCAATACGTGTCACCCAGACAGTCGATTTCAGCCTGACCCCTACCTTCACC
 TATCTGACGTTATGCACACAGTGGGCTGTCAGCTAAAGTCGGAACTGGGATGGAAGTGG
 794 AFL111 MAE2, 800 MAE3, 801 HPH, 813 TAQ1, 837 HPH,
 842 IleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThr
 ATTGAGACAATCACGCTCCCCAAGATGCTGTCTCCCGACTCAACGTGGGGCAGGACT
 TAACTCTGTTAGTGCAGGGGGTCTACGACAGAGGGGTGAGTTGCAGCCCCGTCCTGA
 866 SFAN1, 886 MAE2,
 902 GlyArgGlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMet
 GGCAGGGGGAAGCCAGGCATCTACAGATTTGTCGGCACCGGGAGCGCCCCCTCCGGCATG
 CGTCCCCCTCGGTCCGTAGATGTCTAAACACCCGTGGCCCCCTCGCGGGAGGCCGTAC
 914 ECOR11 SCRF1, 918 SFAN1, 934 BAN1 NLA1V, 938 HPA11 NC11
 SCRF1, 945 HAE11, 946 HHAL, 948 BGL1, 951 MNLL1, 954 HPA11, 9
 57 NSPC1, 958 NLA111,
 962 PheAspSerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThr
 TTCGACTCGTCCGTCTCTGTGAGTGTCTATGACGCAGGCTGTGCTTGGTATGAGCTCACG
AAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGC
 963 TAQ1, 965 HINF1, 976 MNLL1, 992 HGA1, 1003 TTHIII2, 1013
 BAN11 BSP1286 HGIA SAC1, 1014 ALU1,
 1022 ProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCys
 CCCGCCGAGACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGGCTTCCCGTGTGC
 GGGCGGCTCTGATGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACACG

FIG. 79C

1051 RSA1, 1054 NLA111, 1063 AVAL NCII SCRFL SMA1, 1064 HPA1
1 NCII SCRFL, 1081 ECOR11 SCRFL,

1082	GlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHis CAGGACCATCTGAATTGGGAGGGCGTCTTACAGGCCTCACTCATATAGATGCCAC <u>GTCCTGGTAGAACTTAAACCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTG</u>
1084	AVA2 SAU96, 1103 MNLL, 1106 AHAI1, 1107 HGAI, 1117 MAE1 STU1, 1118 HAE111, 1120 MNLL, 1133 SFAN1,
1142	PheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAla TTCTATCCCAGACAAAGCAGAGTGGGAGAACCTCCTTACCTGGTAGCGTACCAAGCC AAAGATAGGGTCTGTTCTCACCCCTCTTGAAGGAATGGACCATCGCATGGTTCGG
1183	ECOR11 SCRF1, 1192 RSA1, 1201 DRA3,
1202	ThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeu ACCGTGTGCGCTAGGGCTCAAGCCCCCTCCCCATCGTGGGACCAGATGTGGAAAGTGTGTTG TGGCACACGCGAT <u>CCCGAGTTGGGAGGGGTAGCAC</u> <u>CTGGTCTACACCTTC</u> <u>ACAAAC</u>
1209	HHA1, 1212 MAE1, 1215 BAN11 BSP1286, 1226 MNLL, 1239 NL AlV, 1240 AVA2 SAU96, 1256 TTHIII2, 1261 HINF1,
1262	IleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaVal ATTCGCTCTCAAGCCCACCCCTCCATGGGCCAACACCCCTGCTATAACAGACTGGGCGCTGTT TAAGCGGAGTTCGGGTGGGAGGTA <u>CCCGGTTGTGGGACGATATGTCTGACC</u> <u>CGCGACAA</u>
1267	MNLL, 1279 MNLL, 1282 NC01, 1283 NLAl11, 1286 SAU96, 12 87 HAE111, 1313 HAE11, 1314 HHAI,
1322	GlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAla CAGAATGAAATCACCTGACGCACCCAGTCACCAAATACATCATGACATGTCGCG GTCTTACTT <u>AGTGGACT</u> <u>TGCGTGGTCAGTGGTTATGTAGTACTGTACG</u> <u>TACAGCCGG</u>
1332	HPH, 1339 HGAI, 1349 MAE3, 1350 HPH, 1363 NLAl11, 1367 NSPC1, 1368 NLAl11, 1369 AVA3 NSI1, 1371 NSPC1, 1372 NLAl11, 1377 CFR1 XMA3, 1378 HAE111,
1382	AspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAla GACCTGGAGGTGCGTCAGGACACCTGGGTGCTCGTGGCGGCGTCTGGCTGCTTGGCC CTGGAC <u>CTCCAGCAGT</u> <u>GCTCGTGGACCCACGAGCAACCGCCGAGGACCGACGAAACCCGG</u>
1384	ECOR11 SCRF1, 1385 GSU1, 1388 MNLL, 1394 MAE3, 1399 BSP 1286 HGIA, 1404 ECOR11 SCRF1, 1409 BSP1286 HGIA, 1419 FNU4H1, , 1421 AHAI1, 1422 HGAI, 1426 ECOR11 SCRF1, 1430 BBV FNU4H1, 1437 CFR1, 1438 HAE111, 1439 FNU4H1, 1441 THAI,
1442	AlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeuSerGlyLys GCGTATTGCTGTCAACAGGCTGCGTGGTCATAGTGGCAGGGTCGTCTGTCCGGGAAG CGCATAACGGACAGTGTCC <u>CGACG</u> <u>CACCAAGTATCACCCGTCCCAGCAGAACAGGCCCTTC</u>
1453	HINC11, 1461 BBV FNU4H1, 1494 HPA11 NCII SCRF1, 1501 NA El,
1502	ProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCys CCGGCAATCATACCTGACAGGGAAAGTCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGC <u>GGCGTTAGTATGGACTGTCCCTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTCAC</u>
1502	HPA11, 1528 MNLL, 1542 TAQ1, 1553 MB011, 1558 BSP1286 I GIA,
1562	SerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLy TCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTCAAGCAGAAC <u>AGAGTCGTGAATGGCATGTAGCTCGTCC</u> <u>ACTACGAGCGGCTCGTCAAGTCGTCTT</u>
1563	DDE1, 1576 RSA1, 1581 TAQ1, 1590 FOK1, 1594 SFAN1, 161

FIG. 79D

TTHIII2, 1621 HAE111 SAU96,

1622 AlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGln
 GCCCTCGGCCTCCTGCAGACCGCGTCCGTAGGCAGAGGTTATGCCCTGCTGTCCAG
 CGGGAGCCGGAGGAGACGTCTGGCGCAGGGCAGTCCTCCAATAGCGGGACGACAGGTC
 1624 MNLL, 1628 HAE111, 1630 MNLL, 1634 PST1, 1639 TTHIII1,
 1642 THA1, 1643 HGA1, 1658 MNLL,
 1682 ThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGly
 ACCAACTGGCAAAAACTCGAGACCTCTGGCGAAGCATATGTGGAACTTCATCAGTGGG
 TGGTGACCGTTTGAGCTCTGGAAGACCGCTTCGTATACACCTGAAGTAGTCACCC
 1697 AVA1 XH01, 1698 TAQ1, 1718 NDE1,
 1742 IleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMet
 ATACAATACTTGGCGGGCTTGTCACGCTGCTGGTAACCCCCCATTGCTTCATTGATG
 TATGTTATGAACCGCCCCGAACAGTTGCGACGGACCATTGGGCGGTAACGAAGTAACTAC-
 1762 HINC11, 1768 BBV FNU4H1, 1772 ECOR11 SCRF1, 1775 BSTE2,
 1776 MAE3,
 1802 AlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIle
 GCTTTACAGCTGCTGTCACCAGCCCACTAACACTAGCCAAACCCCTCTTCAAACATA
 CGAAAATGTCGACGACAGTGGTCGGGTGATTGGTGATCGGTTGGGAGGAGAAGTTGTAT
 1809 ALWN1 NSPB11 PVU11, 1810 ALU1, 1811 BBV FNU4H1, 1817 MA
 E3, 1818 HPH, 1836 MAE1, 1846 MNLL, 1849 MNLL, 1851 MB011,
 1862 LeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGly
 TTGGGGGGGTGGGTGGCTGCCAGCTGCCGGCGTGCGCTACTGCCTTGTGGC
 AACCCCCCCCACCCACCGACGGGTCGAGCGGGCGGCACGGCGATGACGGAAACACCCG
 1877 BBV FNU4H1, 1884 ALU1, 1889 FNU4H1, 1895 NC11 SCRF1, 18
 96 HPA11, 1898 BAN1 NLALV, 1901 FNU4H1, 1919 HAE11, 1920 HHA
 1,
 1922 AlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIle
 GCTGGCTTAGCTGGCGCCGCATCGGCAGTGGACTGGGAAAGGTCTCTCATAGACATC
 CGACCGGAATCGACCGCGGGGTAGCCGTCACAACTGACCCCTTCCAGGAGTTATCTGTAG
 1927 DDE1, 1930 ALU1, 1934 AHA11 BAN1 HAE11 NAR1 NLALV, 1935
 HHA1, 1937 FNU4H1, 1966 AVA2 SAU96, 1969 MNLL, 1978 FOK1,
 1982 LeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGly
 CTTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTCTGTGGCATTCAAGATCATGAGCGGT
 GAACGTCCCCATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCC
 1995 HHA1, 1996 THA1, 2010 BAN11 BSP1286 HGIA SAC1, 2011 ALU
 1, 2021 BSM1, 2029 MB01 SAU3A, 2032 NLAL11, 2039 HPH,
 2042 GluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAla
 GAGGTCCCCTCCACGGAGGACCTGGTCAATCTACTGCCCGCCCATCCTCTGCCCCGGAGCC
 CTCCAGGGGAGGTGCCTCTGGACCAGTTAGATGACGGCGGTAGGAGAGCGGGCTCGG
 2042 MNLL, 2044 AVA2 NLALV SAU96, 2049 MNLL, 2057 MNLL, 2059
 AVA2 SAU96, 2060 TTHIII1, 2062 ECOR11 SCRF1, 2083 FOK1, 208
 6 MNLL, 2093 NC11 SCRF1, 2094 HPA11, 2096 NLALV, 2097 BAN11
 BSP1286, 2101 MNLL,
 2102 LeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGly
 CTCGTAGTCGGCGTGGTCTGTGCAGCAAAACTGCGCCGGCACGTGGCCGGCGAGGGG
 GAGCATCAGCCGCACAGACACGTCGTTATGACGCGGCCGTGCAACCGGCCCGCTCCCC
 2123 BBV FNU4H1, 2134 HHA1, 2136 NAE1, 2137 HPA11, 2142 MAE2
 , 2147 HAE111 SAU96, 2149 AVA1 NC11 SCRF1 SMA1, 2150 HPA11 N

FIG. 79E

C11 SCRF1, 2156 MNLL,

2162 AlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
GCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCCTCCGGGGAAACCATGTTCCCC
CGTCACGTCACCTACTGGCCGACTATCGGAAGCGGAGGGCCCCTTGGTACAAAGGGG

2172 FOK1, 2179 HPA11, 2196 MNLL, 2199 AVA1 NC11 SCRF1 SMA1,
2200 HPA11 NC11 SCRF1, 2205 NLAlV, 2210 NLAl11,

2222

FIG. 80A

Human 23

GlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyArgAla
1 GGCTTCCGGACCTCATGGGTACATACCGCTCGTCGGCCCTCTTGAGGGCGTGCC
ArgAlaLeuAlaHisGlyValArgValLeuGluAspGlyValAsnTyraLathGlyAsn
61 AGGGCCCTGGCCACGGCGTCCGGTTTGGAAAGACGGCTGAACACTATGCCAACAGGAAAC
CG A

LeuProGlyCysSerPheSerIlePheLeuAlaLeuSerCysLeuThrValPro
121 CTTCCCTGGTGCCTTCTATCTTCCCTACTCTTGCCTGACCGTGGCC
T GA

AlaSerAlaTyrGlnValArgAsnSerThrGlyLeuThrValThrAsnAspCysPro
181 GCTTCAGGCTTACCAAGTGGCAAACCTAACCTACGGGCTTACCATGTCACCAATGATTGCCCT
AsnSerSerIleValTyrGluAlaAlaAspAlaIleLeuHisAlaProGlyCysValPro
241 AACTCGAGTATTGTGTACCGAGGGCCGATGCCATGCCATCCTGCACGGTCCGGTTGTGCCCT
T C

CysValArgGluAspAsnValSerArgCystTrpValAlaValThrProThrValAlaThr
301 TGCCTTCCGAGGATAAACGTTCTCGAGATGTTGGGTGACCCCCACGGTGGCCACC
G

LysAspGlyLysLeuProThrThrGlnLeuArgArgHisIleAspLeuValGlySer
361 AGGACGGCAAACCTCCCACACGGCTCACATCGATCTGCTGTCGGGAGC
AlaThrLeuCysSerAlaLeuThrValGlyAspLeuCysGlySerIlePheLeuValGly
421 GCCACCCCTCTGCTCGCCCTACGTGGGGACCTTGCCTCCATCTTCTGTCGGT
T

GlnLeuPheThrPheSerProArgArgHistrpThrThrGlnAspCysAsnCysSerIle
481 CAACTGTTACCTTACGGCCACTGGACGGAACTGCAACTGTGTTCTATC
C

FIG. 80B

TyrProGlyHisIleThrGlyHisArgMetAlaTrpAspMetMetMetAsnTrpSerPro
541 TATCCCGGCCATAACGGTCACCGCATGGATATGATGAAGCTGGTCCCCT G

ThrAlaAlaLeuValValAlaGlnLeuLeuArgIleProGlnAlaLeuAspMetIle
601 ACGGGCGCATTGGTAGCTAGCTCAGCTGGCTCCGGATCCACAAGCCATCTGGACATGATC G AG

AlaGlyAlaHisTrpGlyValLeuAlaGlyMetAlaTyrPheSerMetValGlyAsnTrp
661 GCTGGTGCTCACTGGGACTCCTGGGGCATGGCTATTCTCCATGGTGGGAACCTGG C

AlaLysValLeuValValLeuLeuPheAlaGlyValAspAlaGluThrHisArgThr
721 GCGAAGGTCTGGTAGTGCCTCTATTGGCCGGCTGGACCCAAACCAACCGTACCGT G

GlyGlySerAlaAlaArgSerThrAlaGlyValAlaSerLeuPheThrProGlyAlaArg
781 GGGGAAAGTGCCCCGGCAGCACGGCTGGAGTTGCTAGTCTCTCACACCAGGCCCTGG C T A

C^lAlaAsnIleGlnLeuIleAsnThrAsnGlySerTrpHisIleAsnSerThrAlaLeuAsn
841 CAGAACATCCAGCTGATCAAACACCAACGCCAGTTGGCACATCAAATAGTACGCCCTGAA AT

CysAsnAspSerLeuThrThrGlyTrpLeuAlaGlyLeuPheThrHisIleAsn
901 TGCAATGACAGCCTTACCAACCGGCTGGTAGCGGGGCTTCTATCACATAATCAAC A

SerSerGlyCysProGluArgLeuAlaSerCysArgProLeuThrAspPheAlaGln
961 TCTTCAGGCTGTCCCCGAGGGTGGCCAGCTGGGACCCCTCACCGATTTGCCAGG G A

FIG. 81A

Human 27

GlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAla
1 GGCTTCGGCCGACCTCATGGGTACATTCCGCTCGGGCCTTGCCGCCGCTGCC
ArgAlaLeuAlaHisGlyValArgValLeuGluAspGlyValAsnTyrIleThrGlyAsn
61 AGGGCCCTGGCGCATGGCGTCCGGTCTCGGAAGACGGGTGAACATGCAACAGGGAAC
LeuProGlyCysSerPheSerIlePheLeuAlaLeuSerCysLeuThrValPro
121 CTTCTGGTTGCTCTTCTCTATCTCCTCTGGCTCTGCCTTGCCCTGACCGTGCCC
AlaSerAlaTyrGlnValArgAsnSerSerGlyIleTyrHisValThrAsnAspCysPro
181 GCATCGGCCTACCAAGTACGCAACTCTGGGCATTACCATGTCACCAATGATGCCCT
AsnSerSerIleValTyrGlutHralaAspThrIleLeuHisSerProGlyCysValPro
241 ATTGAGTATTGTTGTAACGAGACGGCCGACACCATTACACTCTCGGGTGTGCCCT
CysValArgGlyAsnAlaSerLysCystrpValProValAlaProThrValAlaThr
301 TCGTTGGCGAGGGTAACGCCCTCGAACGCCACAGTGGTAGCCCCACAGTGGCCACC
ArgAspGlyAsnLeuProAlaThrGlnLeuArgArgHisIleAspLeuValGlySer
361 AGGGACGGCAAACCTCCCCGCAACGCCAGCTCGACGTCACATCGATCTGCTTGTCGGAGT
G G
A A
AlaThrLeuCysSerAlaLeuTyrIleValGlyAspLeuCysGlySerValPheLeuValGly
421 GCCACCCCTTGCTCGGCCCTCTATGTTGGGACTTGTGGGTCTGCTTCTTGTCGGT
C C
GlnLeuPheThrPheSerProArgArgHistpThrGlnAspCysAsnCysSerIle
481 CAACTGTTCACTTCTCCCCAGGGCCACTGGACACGCCAGATGCAACTGCTCTATC

FIG. 81B

TyrProGlyHisIleThrGlyHisArgMetAlaTrpAspMetMetAsnTrpSerPro
541 TACCCCGGCCATATAACGGACACGGCATGGCATGGATATGATGATGA
ThralAlaAlaLeuValMetAlaGlnLeuLeuArgIleProGlnAlaIleLeuAspMetIle
601 ACAGCAGGCCCTGGTAAATGGCTCAGCTGCTCAGGATCCCGCAAGCCATCTGGACATGATC
G
AlaGlyAlaHistrpGlyValLeuAlaGlyIleAlaTyrPheSerMetValGlyAsnTrp
661 GCTGGTGCCTCACTGGGGACTCTAGCCCCATAGCGTATTCTCCATGGTGGAACTGG
AlaLysValLeuValValLeuLeuPheAlaGlyValAspAlaThrThrTyrThrThr
721 GCGAAGCTCCTGGTGTCTTCCTGTTCCCGCTCGAACAACTTACACC
GlyGlyAsnAlaAlaArgThrThrGlnAlaLeuThrSerPheSerProGlyAlaLys
781 GGGGGAATGCTGCCAGGACCAACGGCAGCCACCAAG
GlnAspIleGlnLeuIleAsnThrAsnGlySerTrpHisIleAsnArgThrAlaLeuAsn
841 CAGGATATCCAGCTGATCACACCAACGGCAGTGGCACATCAATGGCACGGCTTGAA
G
T
G
CysAsnAlaSerLeuAspThrGlyTrpValAlaGlyLeuPheTyrTyrHisLysPheAsn
901 TGTAAATGCGAGCCTCGACACCTGGCTGGTAGCGGGCTCTTCTATACCAAACTAAC
T
G
CysSerGlyCysProGluArgMetAlaSerCysArgProLeuAlaAspPheAspGln
961 TCTTCAGGCCCTGGGGAGGATGCCAGCTAGGCCCTTGGCATTCGACAGG
C

1. human 27 2. HCV 1 3. human 23

FIG. 82A

1 CGGCTTGCCTGACCTCATGGGTACATTCCGCTCGTGGCCTCTTGCGGCCGCTGCCAGGGCCCTGGC
1 CGGCTTGCCTGACCTCATGGGTACATACCGCTCGTGGCCCTCTTGAGGGCTGCCAGGGCCCTGGC
1 CGGCTTGCCTGACCTCATGGGTACATACCGCTCGTGGCCCTCTTGAGGCCCTGCCAGGGCCCTGGC
73 GCATGGGTCCGGTTCTTGAAGACGGGTGAACATATGCCAACAGGGAAACCTTCTGGTGTCTTCTCTAT
73 GCATGGGTCCGGTTCTTGAAGACGGGTGAACATATGCCAACAGGGAAACCTTCTGGTGTCTTCTCTAT
73 GCACGGGTCCGGTTtTGAAGACGGGTGAACATATGCCAACAGGGAAACCTTCTGGTGTCTTCTCTAT
145 CTTCCCTCTGGCTCTGGCTCTTGAACCTACCAAGTACGCCATCGCAACTCCtCGGGcat
145 CTTCCCTCTGGCCCTGGCTCTTGAACCTGGCCCTACCAAGTGGCAACTCCACGGGCT
145 CTTCCCTCTGGCCCTACTCTTGCCTGACCCGGCTTCAACCGCTAACAGTCAGCT
217 TTACCATGTCAACCAATGATTGCCCTAATTGAGTATTGTGTACGAGaGGCCACaccatCTTAACACTCC
217 TTACCAAGTCACCAATGATTGCCCTAACCTGAGTATTGTGTACGAGGCCCCGATGCCATCCTGCACaCTCC
217 TTACCATGTCAACCAATGATTGCCCTAACCTGAGTATTGTGTACGAGGCCCCGATGCCATCCTGCACgCTCC
289 GGGGTGtGTCCCTTGGTTCGGAGGGTAACGCCCTGAAattGGTGGTGGCGGTagCCCCCACaaGTGGCCAC
289 GGGGTGCTCCCTTGGGTTCGtGAGGGCAACGCCCTCGAGgtGTGGTGGCGAtGACCCCTACGGTGGCCAC
289 GGGGTGtGTCCCTTGGTCCGAGGataACGtCTCGAGAtGTTGGTGGGGtGACCCCCACGGTGGCCAC

FIG. 82B

361 CAGGGACGGCAACCTCCCCGCAACGCAGCTCGACGTCTGCTGGGAGtGCCACCCttTG
361 CAGGGATGGCAAACCTCCCCGAGCGAGCTTCAGCTCACATGARCTGCTRGTCGGAGGCCACCCtTG
361 CAAGGACGGCAAACCTCCCCAACAGCAGCTCGACGTCAACTCGATCTGCTTGTGGGAGGCCACCCtTG
433 CTCGGCCCTCATGTGGGGACTtGTGGGGTCTGTCTTCTGTGGGtCAACTGTTCACTtTCTCCCCAG
433 tTCGGCCCTCATCGTGGGGACCTGTGGGtCTGTCTTCTGTGGGtCAACTGTTCACTtTCTCCCCAG
505 GCGCCACTGGACAACGCCAAGAtGCAACTGCTCATCTACCCGGCAATAACGGAcACCGCATGGCATG
505 GCGCCACTGGGACGGCAAGgtGCAATTGCTCTATCTACCCGGCAATAACGGGAcACCGCATGGCATG
577 GGATATGATGAACTGGTCCCTACAgCaGGGtGGTAATGGCTCAGGtGtCAGGATCCCCGCAAGCCAT
577 GGATATGATGAACTGGTCCCTACGGGGGtGGTAATGGCTCAGGtGtCAGGATCCCCGCAAGCCAT
577 GGATATGATGAACTGGTCCCTACGGGGGtGGTAATGGCTCAGGtGtCAGGATCCCCGCAAGCCAT
649 CTGGACATGATGGTCCCTACGGGGGtGGTAATGGCTCAGGtGtCAGGATCCCCGCAAGCCAT
649 CTGGACATGATGGTCCCTACGGGGGtGGTAATGGCTCAGGtGtCAGGATCCCCGCAAGCCAT
649 CTGGACATGATGGTCCCTACGGGGGtGGTAATGGCTCAGGtGtCAGGATCCCCGCAAGCCAT
721 GGCGAAGGTCTGGTAGTGTGCTTGTGTTGCGGCGTCACTGGGAGTCTGGGGCATAGGTTATTCATGGGGGAACtG
721 GGCGAAGGTCTGGTAGTGTGCTTGTGTTGCGGCGTCACTGGGAGTCTGGGGCATAGGTTATTCATGGGGGAACtG
721 GGCGAAGGTCTGGTAGTGTGCTTGTGTTGCGGCGTCACTGGGAGTCTGGGGCATAGGTTATTCATGGGGGAACtG

793	tGCCaggACCacGcaggGcgctcaccAGtttTCagCCAGGGCCAAGCAGGAttatCCAGCTGATCAACAC	
793	CggCCACACTgtGtCTGGATTGTAGCCTCTCGCACCAAGGGCCAAGCAGGAACGTCAGCTGATCAACAC	
793	CGCCCGAAGcacGgCTGGAGTTGCTAGtCTCTCACACCAGGGCCLAGGCAGAACatCCAGCTGATCAACAC	
865	CAACGGCAGTTGGCACatCAATCGCACGGCCTtGAACtGtAATGcgAGCCTCgACACTGGCTGGgtatGCCG	
865	CAACGGCAGTTGGCACCTCAATAAGCACGGCCCTGAACtGCAATGAtAGCCTCAAACACGGCTGGTTtgGCCAGG	
865	CAACGGCAGTTGGCACatCAATAAGtACGGCCTtGAACtGCAATGACAGCCtACCCGGCTGGTTtagGCCGG	
937	GCTCTTCTATtACCAAAactTCAAAactCTTCAAGGtTgGCCAGGTatGCCAGGTtGAGGGctAGCCAGCTGCCGACCCCTTACCGGA	
937	GCTTTTCTATCACCAAAactTCAAAactCTTCAAGGTtTGGCCAGGTTGGCTGGCTGGCTGGCTACCGGA	
937	GCTTTTCTATCACCAAAactTCAAAactCTTCAAGGTtTGGCCAGGTTGGCTGGCTGGCTACCGGA	

1009	TTTCGACCCAGG	*****
	*****	*****
1009	TTTTGACCCAGG	*****
	*****	*****
1009	TTTTGCCCCAGG	*****

FIG. 82C

FIG. 83

1 GFADLMGYIPLVGAPLGGAAARALAAHGVRYVLEDGVNYATGNLPGCSFSIFTLLALLSCLTVVASAYQVRNSSGI
1 GFADLMGYIPLVGAPLGGAAARALAAHGVRYVLEDGVNYATGNLPGCSFSIFTLLALLSCLTVVASAYQVRNSTGL
1 GFADLMGYIPLVGAPLGGAAARALAAHGVRYVLEDGVNYATGNLPGCSFSIFTLLALLSCLTVVASAYQVRNSTGL
73 YHVTNDCPNSSTVYETADTILHSPGCVPCTREGNASKCWVpvaPTVATRDGnLPATQLRHDIDLVGSATLC
73 YHVTNDCPNSSTVYEADAILHtPGCVPCTREGNASCWVAmTPTVATRDGKLPAATQLRHDIDLVGSATLC
73 YHVTNDCPNSSTVYEADAILHAPGCCVPCTREdnvSRCWVAvTPTVATKGKLPTTQLRHDIDLVGSATLC
145 SALYVGDLCGSVFTLVGOLFTESPRRHWTQdCNCSIYPGHTIGHMAWDMMMNWSPTaALVMAQLLRIPQAI
145 SALYVGDLCGSVFTLVGOLFTESPRRHWTQdCNCSIYPGHTIGHMAWDMMMNWSPTaALVMAQLLRIPQAI
145 SALYVGDLCGSVFTLVGOLFTESPRRHWTQdCNCSIYPGHTIGHMAWDMMMNWSPTaALVVAQLLRIPQAI
217 LDMDIAGAHWGVLAGIAYFSMVGNTWAKVLVVLFLAGVDAATTGGNaartTqaltSSPGAKQdiQLINT
217 LDMDIAGAHWGVLAGIAYFSMVGNTWAKVLVVLFLAGVDAETHVTGGSAaghTvSfvlapGAKQNVLINT
217 LDMDIAGAHWGVLAGIAYFSMVGNTWAKVLVVLFLAGVDAETHVTGGSAaqrstGaSLftPGATONiQLINT
289 NGSWHINRTALNCNaSLdTIGWVAGLFYYHKFNSSGCPERTASCRPLaDFTDQ
289 NGSWHINSTALNCNDSLntGWLAGLFYHHKFNFNSSGCPERLASCRPLTDDEDQ 1. human 27
289 NGSWHINSTALNCNDSLttGWLAGLFYHHKFNFNSSGCPERLASCRPLTDDEaQ 2. HCV 1
289 NGSWHINSTALNCNDSLttGWLAGLFYHHKFNFNSSGCPERLASCRPLTDDEaQ 3. human 23

FIG. 84

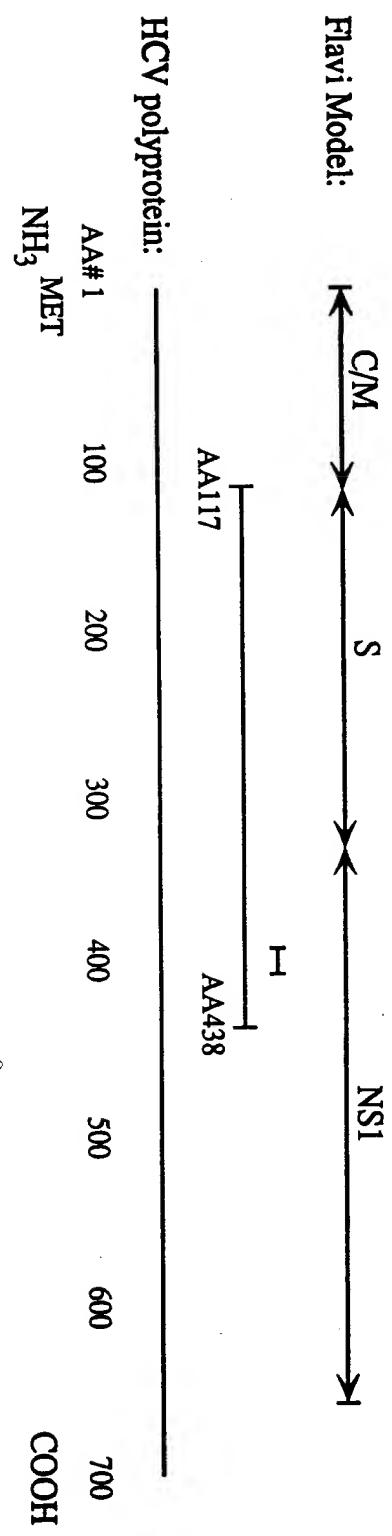


FIG. 85A

1 1. ssThorn#8.r (1-587)
1 2. SSECL#2.r (1-587)
1 3. SSHCTL18#7.r (1-587)
1 4. env1.hcv (1-1657)

GA
GA
GA
GA

289 ggggtggggatggctactgtctcccggtcgccctagctggggccccacagaccccgccgtaaGg

3 ATTCCGCAATTGGCTAACGGTCATCGATAACCTTACGTGCCGCTTCGCCGACCTCATGGGTACATCCGCTC
3 ATTCCGCAATTGGCTAACGGTCATCGATAACCTTACGTGCCGCTTCGCCGACCTCATGGGTACATCCGCTC
3 ATTCCGCAATTGGCTAACGGTCATCGATAACCTTACGTGCCGCTTCGCCGACCTCATGGGTATATACCGCTC
361 tcgcGCCAAATTGGCTAACGGTCATCGATAACCTTACGTGCCGCTTCGCCGACCTCATGGGTACATACCGCTC

75 GTCGGGCCCTCTGGggGGGACTGCCAGGGCCATGGGGTCCGGTCTGGAAAGACGGGGTGAAAC
75 GTCGGGCCCTCTGGAGGGCTGCCAGGGCCATGGGGTCCGGTCTGGAAAGACGGGGTGAAAC
75 GTCGGGCCCTCTGGAGGGCTGCCAGGGCCATGGGGTCCGGTCTGGAAAGACGGGGTGAAAC
433 GTCGGGCCCTCTGGAGGGCTGCCAGGGCCATGGGGTCCGGTCTGGAAAGACGGGGTGAAAC

FIG. 85B

147 TATGCAACAGGAACCTTCTGGTTGCTCTTCTCTTCCTTGCCCTCTTGCTCTTGACTGACC GT
147 TATGCAACAGGAACCTTCTGGCTCTTCTTCTTGCTTATCTTCCCTTGCTCTTGCTTGACTGTG
147 TATGC CAGGGAACCTTCCCTGGTTGCTCTTCTTCTTGCCCTCTTGCTCTTGACTGTG
505 TATGCAACAGGGAACCTTCCCTGGTTGCTCTTCTTGCCCTTGCTCTTGACTGTG
219 CCCGCTTACGCCCTACCAAGTGCACACTCCACGGGCTTACCATGTCACCAATGATTGCCCCAACTCGAGT
219 CCCGCTTACGCCCTACCAAGTGCACACTCCACGGGCTTACCATGTCACCAATGATTGCCCCAACTCGAGC
219 CCCGCTTACGCCCTACCAAGTGCACACTCCACGGGCTTACCATGTCACCAATGATTGCCCCAACTCGAGT
577 CCCGCTTACGCCCTACCAAGTGCACACTCCACGGGCTTACCATGTCACCAATGATTGCCCCAACTCGAGT
291 AT^tTGTGTACGAGGGCCGATGCCATCCCTGCACgtCCGGGTGTGTTGCCCTTGCGTTTCgCGAGGGtAACGCC
291 AT^tTGTGTACGAGGGCCGATGCCATCCCTGCACACTCCGGGTGTGTTGCCCTTGCGTTCACGAGGGCAACGTC
291 AT^tTGtaTACGAAAGGGCCGACGCCATCCCTGCACACTCCGGGTGTGTTGCCCTTGCGTTCACGAGGGCAACGTC
649 AT^tTGTgtACGAGGGCCGATGCCATCCCTGCACACTCCGGGTGTGTTGCCCTTGCGTTTCgTGAGGGCAACGCC
363 TCGAGGGTTGGGTGGCGATGACCCCCACGGTGGCCACGGTGGCCACAGGGCAAGGGCAAGCTGGCA
363 TCGAGGGTTGGGTGGCGATGACCCCCACGGTGGCCACAGGGATGGCAAACCTCCCACAGCAGCTTCGA
363 TCGAGGGTTGGGTGGCGatGACCCCCACGGTGGCCACAGGGATGGCAAACCTCCCACAGCAGCTTCGA
721 TCGAGGGTTGGGTGGCGatGACCCCCACGGTGGCCACAGGGATGGCAAACCTCCCACAGCAGCTTCGA

435 CGTCACATCGATCTGCTTGTGGAGGCCACCCCTCTGCTCGGCCCTCTACGTGGGACCTGTGGGTCC
435 CGTCACATCGATCTGCTTGTGGAGGCCACCCCTCTGCTCGGCCCTCTACGTGGGACCTGTGGGTCT
435 CGTCACATCGATCTGCTTGTGGAGGCCACCCCTCTGCTCGGCCCTCTACGTGGGACCTGTGGGTCT
793 CGTCACATCGATCTGCTTGTGGAGGCCACCCCTCTGTTCGGCCCTCTACGTGGGACCTGTGGGTCT

507 aTCTTtCTTGTGGTCAACTGTtACCTTCTCCCAGGCCACTGGACGCCAAGGTTGCAATTGCTCT
507 GTCTTCCCTTGTGGTCAACTGTtACCTTCTCCCAGGCCACTGGACGCCAAGGTTGCAATTGCTCT
507 GTCTTCTTGTGGCCAACGTtACCTTCTCCCAGGCCACTGGACGCCAAGGTTGCAATTGCTCT
865 GTCTTCTTGTGGCCAACGTtACCTTCTCCCAGGCCACTGGACGCCAAGGTTGCAATTGCTCT

579 ATCGAATTC
579 ATCGAATTC
579 ATCGAATTC
937 ATCTAtccc

FIG. 85C

10 20 30 40

GAATTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCGGCCATAT

X: :

/SSp CTCTCCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCGGCCATAT

550 560 570 580 590 600

50 60 70 80 A 90 100

AACAGGTCAACGCATGGCATGGATATGATGATGAACCTGGTCCCTACGACGGCGTTAGT

: :

AACGGGTCAACGCATGGCATGGATATGATGATGAACCTGGTCCCTACGACGGCGTTGGT

610 620 630 640 650 660

110 120 130 140 150 160

GGTAGCTCAGCTGCTCCGGATCCCACAAGCCATCTGGACATGATCGCTGGTGCCTACTG

: :

AATGGCTCAGCTGCTCCGGATCCCACAAGCCATCTGGACATGATCGCTGGTGCCTACTG

670 680 690 700 710 720

170 180 190 200 210 220

GGGAGTCCTGGCGGGCATAGCGTATTCTCCATGGTGGGGAACTGGCGAAGGTCTTGGC

: :

GGGAGTCCTGGCGGGCATAGCGTATTCTCCATGGTGGGGAACTGGCGAAGGTCTTGGT

730 740 750 760 770 780

230 240 250 260 270 280

AGTGCTGCTGCTATTGCCGGCGTCAGCGGAAACCCACGTCACTGGGGGGATGCCGC

: :

AGTGCTGCTGCTATTGCCGGCGTCAGCGGAAACCCACGTCACTGGGGGGAAAGTGCCGG

790 800 810 820 830 840

290 300 310 320 330 340

CAAAACTACGGCTAGCCTTACTGGTCTCTCAATTAGGTGCCAAGCAGAACATCCAGCT

: :

CCACACTGTGTCTGGATTGTTAGCCTCTCGCACCAAGCGCCAAGCAGAACGTCCAGCT

850 860 870 880 890 900

350 360 370 380 390 400

GATCAACACCAACGGCAGTTGGCACATCAACAGGACGGCCTTGAACGTCAATGATAGCCT

: :

GATCAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACGTCAATGATAGCCT

910 920 930 940 950 960

410 420

CAACACCGGCTGGAAATTC

: : : : : : : X

CAACACCGGCTGGTGGCAGGGCTTTCTATCACCACAAGTTCAACTCTTCAGGCTGTCC

970 980 990 1000 1010 1020

FIG. 86

AA #117-308 (putative envelope region)

FIG. 87

1) HCT #18 (USA)	3 clones sequenced
2) JH23 (USA)	?
3) JH 27 (USA)	?
4) PBL-Th (USA)	2 clones sequenced
5) EC1 (Italy)	3 clones sequenced
6) HCV-1 (chimpanzee)	multiple

C/M←→S

- 1) (P)
 2)
 3)
 4)
 5)

6) RNLGKVIDTLTCGFADLMGYIPLVGAPLGGALARALAHGVRVLEDGVNYATGNL

1)	H			
2)				
3)	S		T	T
4) L				
5) (F)	S			

6) PGCSFSIFLLALLSCLTVVPASAYQVRNSTGLYHVTNDCPNSSIVYEAADAILH

1)	Y (H)	V	V	T
2) A	D	V	V	K
3) S		PVA		N
4) A			A	R
5)	H	V		T

6) TPGCVPCVREGNASRCWVAMPTVATRDGKLPATQLRRHIDLLVGSATLCS

1)				
2)	I		D	
3)			D	
4)				
5)	I			

6) ALYVGDLCGSVFLVGQLFTSPRRHWTTQGCNCI

SUMMARY: "S" AA117-308 (93%)

HCT#18, PBL-Th, EC1(Italy) have 97% homology with HCV-1

JH23 and JH 27 have 96% and 95% homology with HCV-1,respectively

AA#300-438 (C-terminal region of the putative envelope region and amino ~1/3 of NS1)

- 1) JH23 ?
- 2) JH27 ?
- 3) Japanese isolate (T. Miyamura) ?
- 4) EC10 (Italy) 2 clones sequenced
(one nt difference, which did not result in an amino acid change)
multiple
- 5) HCV-1 (chimpanzee)

S ← → NS1

- 1) D A V
- 2) D A
- 3) V S VM V
- 4)

5) TTQGCNCISIYPG HIT GHR MAW DMM MNWSPTT ALV MAQ LL RIP QAI LDM IAGA

- 1) M R ARSTA VA
 - 2) T YT N A R T Q A L T F
 - 3) L Y I M G H R V Q V T T L T
 - 4) A I A K T A S L T A
- 5) HWGVLAGIA YFSMVGNWAKVLVVLL FAGVDAETHVTGGSAGHTVSGFVSL

- 1) FS R I I T V
 - 2) FT D I I R A D
 - 3) FR S K I V I R Q F
 - 4) FNL I I R N
- 5) LAPGAKQNVQLINTNGSWHLNSTALNCNDLNTGWL

SUMMARY: NS 1 AA 330-660

"Isolate"	%Homology (AA330-438)	%Homology (AA383-405)
JH23	83	57
JH27	80	39
Japanese	73	48
EC10 (Italy)	84	48

FIG. 88

FIG. 89A

5' terminus-----

CACTCCACCATGAATCACTCCCTGTGAGGAACTACTGTCCTCACGCAGAAAGCGTCTAG
CCATGGCGTTAGTATGAGTGTGTCGTGCAGCCTCCAGGACCCCCCTCCGGGAGAGCCATA
GTGGTCTCGGAAACCGGTGAGTACACCGGAATTGCCAGGACGACGGGTCCTTCTTGA
TCAACCCGCTCAATGCCCTGGAGATTGGCGTGCCTCGCAAGACTGCTAGCCGAGTAGT
GTTGGGTCGCAAAGGCCTTGCGTACTGCCCTAGGGTGCTTGCAGTGCCTGGGAG-300

(Putative initiator methionine codon)

| G C

GTCTCGTAGACCGTGCACCATGAGCACGAATCCTAACCTCAAAAAAAAACAAACGTAA
CACCAACCGTCGCCAACAGGACGTCAAGTCCCAGGTGGCGGTCAAGATCGTTGGTGGAGT
TTACTTGTGCGCGCAGGGGCTAGATTGGGTGTGCGCGCAGCAGAGAAAGACTTCCGA
GCGGTCGCAACCTCGAGGTAGACGTCAGCCTATCCCCAAGGCTCGTGGCCGAGGGCAG
GACCTGGGCTCAGCCGGTACCCCTGGCCCTATGGCAATGAGGGCTGCGGGTGGC-600
GGGATGGCTCTGTCTCCCCTGGCTCTGGCCTAGCTGGGCCCCACAGACCCCCGGCG
TAGGTGCGCGCAATTGGGTAAGGTATCGATACCCTACGTGCGGCTCGCCGACCTCAT
GGGGTACATAACGCTCGTGGCGCCCTTGGAGGCGCTGCCAGGGCCCTGGCGCATGG
CGTCCGGGTTCTGGAGACGGCGTGAACATGCAACAGGGAACCTCCTGGTTGCTCTT

C G

CTCTATCTTCCCTCTGGCCCTGCTCTTGCTTGAATGTGCCCCGCTTGGCCTACCAAGT-900
GCGCAACTCCACGGGGCTTACCAACGTCACCAATGATTGCCCTAACCTCGAGTATTGTGA
CGAGGGCGGCCATGCCATCCTGCACACTCCGGGGTGCCTGGCGTTCTGGTGGAGGGCAA
CGCCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAGGGATGGCAAACCTCC
CGCGACGCGAGCTTCGACGTACATCGATCTGCTTGTGCGGCCACCCCTCTGTTGGC
CCTCTACGTGGGGGACCTATGCGGGTCTGTCTTCTTGTGCGCCAATGTTCACCTTC-1200
TCCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCATCTATCCGGCCATATAAC

G

GGGTCAACCGCATGGCATGGGATATGATGATGAACCTGGTCCCCTACGACGGCGTTGGTAAT
GGCTCAGCTGCCGGATCCCACAAGCCATTTGGACATGATCGCTGGTGCCTACTGGGG
AGTCCTGGCGGGCATAGCTTCTCATGGTGGGGAACTGGGCGAAGGTCTGGTAGT
GCTGCTGCTATTGCGGGCGTCACGGGAAACCCACGTCACCGGGGGAAAGTGCCTGGCCA-1500
CACTGTGCTGGATTGTTAGCCTCCTCGCACCAAGGCGCCAAGCAGAACGTCAGCTGAT
CAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACCTGCAATGATAGCCTCAA
CACCGGCTGGTGGCAGGGCTTTCTATCACCACAAGTCAACTCTTCAGGCTGTCCTGA
GAGGCTAGCCAGCTGCCGACCCCTACCGATTGACCAAGGGCTGGGGCCCTATCAGTTA
TGCCAACGGAAAGCGGGCCCGACCAAGCGCCCTACTGCTGGCACTACCCCCAAAACCTTG-1800
CGGTATTGTGCCCGAAGAGTGTGTGGTCCGGTATATTGCTTCACTCCCAGCCCCGT
GGTGGTGGGAACGACCGACAGGTGGCGCCACCTACAGCTGGGGTAAAATGATAC
GGACGTCTCGTCTTAACAATACCAAGGCCACCGCTGGCAATTGGTTCGGTTGTACCTG
GATGAACTCAACTGGATTCAACCAAGTGTGCGGAGCGCCCTTGTGTCATGGAGGGC
GGCAACAAACACCCCTGCACTGCCCACTGATTGCTTCCGCAAGCATCGGACGCCACATA-2100

C

CTCTCGGTGCGGCTCCGGTCCCTGGATCACACCCAGGTGCCTGGTCACTACCCGTATAG
GCTTGGCATTATCCTTGTACCATCAACTACACCATATTAAAATCAGGATGTACGTGGG
AGGGGTGAAACACAGGCTGGAAAGCTGCCTGCAACTGGACGCGGGCGAACGTTGCATCT
GGAAGACAGGGACAGGTCCGAGCTCAGCCGTTACTGCTGACCAACTACACAGTGGCAGGT
CCTCCCGTGTCTTACAACCCCTACCAAGCCTGTCCACCGGCCCTCATCCACCTCCACCA-2400
GAACATTGTGGACGTGCACTTGTACGGGGTGGGGTCAAGCATCGCTCTGGGCCAT
TAAGTGGGAGTACGTGTTCTCCCTGTTCTGTGCTTGCAGACGCGCGCTGCTCTG
CTTGTGGATGATGCTACTCATATCCCAAGCGGGAGGGCGTTGGAGAACCTCGTAATACT
TAATGCAGCATCCCTGGCGGGACGACGGTCTTGATCCTTCTCGTGTCTTGTCTGCTT
TGCATGGTATTGAAGGGTAAGTGGGTGCCCCGGAGCGGGTCAACCTTCACTGGGATGTG-2700
GCCCTCCTCCTGCTCCGTGGCGTTGGCAGCGGGCGTACGCGCTGGACACGGAGGT
GGCGCGTGTGGCGGTGTTCTCGTGGGTTGATGGCGTCACTCTGTCAACCATA
TTACAAGCGCTATATCAGCTGGTGTGGCTTGTGGCTTCAAGTATTCTGACCAAGAGTGG
AGCGCAACTGCACGTGTGGATTCCCCCTAACGTCCGAGGGGGCGCGACGCCGTCA

FIG. 89B

CTTACTCATGTGCTGTACACCCACTCTGGTATTTGACATCACCAAATTGCTGCTGGC-3000
CGTCTTCGGACCCCTTGGATTCTTCAAGCCAGTTGCTTAAAGTACCCACTTTGTGCG
CGTCCAAGGCCTTCTCGGTTCTGCGCGTAGCGCGGAAGATGATCGGAGGCCATTACGT
GCAAATGGTCATCATTAAGTTAGGGCGCTTACTGGCACCTATGTTATAACCATCTCAC
TCCTCTCGGGACTGGGCGCACAACGGCTTGCGAGATCTGGCGTGGCTTAGAGCCAGT
CGTCTTCGCCAAATGGAGACCAAGCTCATCACGTGGGGGCAGATACGCCGCGTGCAGG-3300
TGACATCATCAACGGCTTGCTGTTCCGCCGCAGGGGCCGGAGATACTGCTCGGGCC
AGCGATGGAATGGTCTCAAGGGGTGGAGGTTGCTGGGCCCATCACGGCGTACGCCA
GCAGACAAGGGGCCCTAGGGTGCATAATCACCAAGCCTAAGTGGCCGGACAAAAACCA
AGTGGAGGGTGGAGGTCCAGATTGTCTAAGTGGCTGCCAAACCTCTGGCAACGTGCA
CAATGGGGTGTGCTGGACTGTCTACCACGGGCCGGAACGAGGACCATCGCTACCCAA-3600

T
GGGTCTGTATCCAGATGTATACCAATGTAGACCAAGACCTTGTGGCTGGCCGCTCC

C
GCAAGGGTAGCCGCTCATTGACACCCCTGCACTTGCAGGGCTCCTCGGACCTTACCTGGTCAC
GAGGCACGCCGATGTCATTCCCGTGCAGGGGGGTGATAGCAGGGGCAGCCGTGTC
GCCCGGCCCATTTCTACTTGAAGGGCTCCTCGGGGGTCCGCTGTTGCCCCGCCGG
GCACGGCGTGGGCATATTAGGGCCGCGGTGTCACCCGTGGAGTGGCTAAGGCGGTGGA-3900
CTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCGGCTTACGGATAACTC
CTCTCACCAGTAGTGGCCAGAGCTTCAAGGTGGCTCACCTCATGCTCCCACAGGCAG
CGGCAAAAGCACCAAGGTCCCAGCTGCATATGCAGCTAGGGCTATAAGGTGCTAGTACT
CAACCCCTGTGCTGCAACACTGGCTTGGTCTACATGTCCAAGGCTATGGGAT

T
CGATCTAACATCAGGACGGGGTGAGAACAAATTACCAACTGGCAGCCCCATCACGTACTC-4200
CACCTACGGCAAGTTCTTGCAGGGGGTCTGGGGGGCCTATGACATAATAAT
TTGTGACGAGTGCCACTCACGGATGCCACATCCATTTGGGCTATGGCACTGTCCTTGA
CCAAGCAGAGACTCGGGGGCGAGACTGGTTGTCTGCCACGCCACCCCTCCGGGCTC
CGTCACTGTGCCCATCCAACATCGAGGAGGTTGCTCTGTCCACCAAGGGAGAGATCCC
TTTTACGGCAAGGCTATCCCCCTGAAAGTAATCAAGGGGGGAGACATCTCATCTCTG-4500
TCATTCAAAGAAGAAGTGCAGACTCGCCGAAAGCTGGTGCATTGGGCTATCAATGC
CGTGGCCTACTACCGCGGTCTTGACGTGTCCGTATCCGACCAGCGGGATGTTGTCGT

A
CGTGGCAACCGATGCCCTCATGACCGGGTATACCGGGACTTCGACTCGGTGATAGACTG
CAATACGTGTGTCACCCAGACAGTCGATTTCAAGCTTACCTTCAACATTGAGAC
AATCACGCTCCCCAGGAATGCTGTCCTCGCACTCAACGTGGGGCAGGACTGGCAGGGG-4800
GAAGCCAGGCATCTACAGATTGTCAGGAGGTTGCTCTGGGCTATGGGCTATGAGCTACGCCGCCGA
GTCCGTCCTCTGTGAGTGTCTATGACGCAGGCTGTGTTGATGAGCTACGCCGCCGA
GACTACAGTTAGGCTACGAGCGTACATGAACACCCGGGGCTTCCGTGTGCCAGGACCA
TCTTGAATTGGGAGGGCGTCTTACAGGCCTCACTCATATAGATGCCACTTCTATC
CCAGACAAAGCAGAGTGGGAGAACCTTCTTACCTGGTAGCGTACCAAGCCACCGTG-5100
CGCTAGGGCTCAAGCCCCTCCCCATCGTGGGACAGATGTGGAGTGTGTTGATTGCGCT
CAAGCCCACCCCTCATGGGCAACACCCCTGCTATACAGACTGGCGCTGTTAGAATGA
AATCACCTGACGCACCCAGTCACCAAATACATGACATGCATGTCGGCCGACCTGGA
GGTCGTACAGACCTGGGTGCTCGTGGCGTCTGGCTGCTTGGCCCGTATTG
CCTGTCAACAGGGTGCCTGTCATAGTGGGAGGGTGTCTTGTCGGGAAGCCGGCAAT-5400
CATACCTGACAGGGAAAGTCTCTACCGAGAGGTTGATGAGATGAAAGAGTGTCTCAGCA
CTTACCGTACATCGAGCAAGGGATGATGCTGCCAGCAGTTCAAGCAGAAGGCCCTCGG
CTCCTGCAAGACCGCGTCCCGTCAAGGAGGTTATGCCCTGCTGTCAGACCAACTG
GCAAAAACCTGAGACCTCTGGCGAAGCATATGTGGAACTTCACTAGTGGGATAACAATA
CTTGGGGGCTTGTCAACGCTGCCCTGGTAACCCGCCATTGCTTCAACATATTGGGGGG
AGCTGCTGTACAGCCCCTAACCAACTAGCCAAACCTCTTCAACATATTGGGGGG
GTGGGGTGGCTGCCAGCTGCCGCCGGTGGCGTACTGCCCTTGTGGCGCTGGCTT
AGCTGGCGCCGCACTGGCAGTGTGGACTGGGAGGGTCTCATAGACATCCTTGCA
GTATGGCGGGCGTGGCGGGAGCTTGTGGCATTCAAGATCATGAGCGGGTGAGGGCCC
CTCCACGGAGGACCTGGTCAATCTACTGCCGCCATCCTCTGCCCGGAGGCCCTCGTAGT-6000
CGGCGTGGCTGTGCAAGCAAACTGCGCCGGCACGTTGGGCCGGCGAGGGGGCAGTGCA
GTGGATGAACCGGGCTGATAGCCTTGCCTCCGGGGAAACATGTTCCCCCACGCA
CGTGGCCGGAGAGCGATGCACTGCCCGTCACTGCCATACTCAGCAGCCTCACTGTAAC
CCAGCTCCTGAGGGCACTGCACCAAGTGGATAAGCTGGAGTGTACCAACTCCATGCTCCGG

FIG. 89C

TTCCCTGGCTAAGGGACATCTGGACTGGATATGCGAGGTGTTGAGCGACTTTAACGACCTG-6300
 GCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGATCCCCTTGTGTCCTGCCAGCGCG
 GTATAAGGGGGCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGA
 GATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCTAGGACCTGCAGGAA
 CATGTGGAGTGGGACCTCCCCATTAAATGCCATACACCAACGGGCCCCGTACCCCCCTTC
 TCGCCGAACTAACGTTCGCCTATGGAGGGTGTGAGAGGAATATGTGGAGATAAG-6600
 GCAGGTGGGGACTTCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCGTG
 CCAGGTCCCCTGCCCCGAATTTCACAGAATTGGACGGGTGCGCTACATAGGTTGC
 GCCCCCCCTGCAAGGCCCTGCTGCCGGAGGAGGTATCATTAGAGTAGGACTCCACGAATA
 CCCGGTAGGGTCGAATTACCTTGCGAGGCCGAACCGGACGTGCGCTGTTGACGTCAT
 GCTCACTGATCCCCTCCCATATAACAGCAGAGGGCAGGCCGGAGGTGGGATC-6900
 ACCCCCCCTGTGGCCAGCTCTCGGCTAGCCAGCTATCCGCTCATCTCTCAAGGCAAC
 TTGACCGCTAACCATGACTCCCCCTGATGCTGAGCTCATAGAGGCCAACCTCTATGGAG
 GCAGGGAGATGGGGCGCAACATCACCAAGGGTTGAGTCAGAAACAAAGTGGTGATTCTGGA
 CCTCTTCGATCCGCTTGTGGCGAGGAGGACGAGCGGGAGATCTCGTACCCGAGAAAT
 CCTGCAGGAAGTCTGGAGATTGCCCCAGGCCCTGCCCCTTGGCGCGCCGGACTATAA-7200
 CCCCCCGCTAGTGGAGACGTGGAAAAAGCCGACTACGAACACCTGTGGTCCATGGCTG
 TCCGCTCCACCTCCAAAGTCCCCTCCTGTGCCTCCGCCCTCGGAAGAAGCGGACGGTGGT
 CCTCACTGAATCAAACCTATCTACTGCCCTGGCCGAGCTGCCACAGAACGCTTGGCAG
 CTCCCTCAACTTCCGGCATTACGGGCAGAACATACGACAAACATCCTCTGAGGCCGCCCCCTC
 TGGCTGCCCGGACTCGACGCTGAGTCCTATTCCCATGCCCGGCTGGAGGGGGA-7500
 GCCTGGGGATCCGGATCTTAGCGACGGGTATGGTCAACGGTCAGTAGTGAGGCCAACGC
 GGAGGATGTGTTGCTCAATGTCTTACTCTGGACAGGCGACTCGTCACCCCGTG
 CGCCGCGGAAGAACAGAAACTGCCATCAATGCACTAAGCAACTCGTGTACGTACCA
 CAATTGGTGTATTCCACACCTCACGAGTGCTTGCACAGGAGAACAGAACGAGAAAGTCACATT
 TGACAGACTGCAAGTCTGGACAGCATTACCAAGGAGTACTCAAGGGGTTAACGAGC-7800
 GGCCTAAAGTGAAGGCTAACTTGCTATCCGTAGAGGAAGCTTGAGGCCCTGACGCC
 ACACCTAGCCAATCCAAGTTGGTATGGGCAAAAGACGTCGTTGCCATGCCAGAAA
 GGCGTAACCCACATCAACTCCGTGTGGAAAGACCTCTGGAAAGACAATGTAACACCAAT
 AGACACTACCATCATGGCTAAGAACGAGGTTTCTGCGTTAGGCCCTGAGAACGGGGTC
 TAAGCCAGCTGCTCATCGTGTCCCCGATCTGGCGTGCCTGTCAGAACGAGGATGGC-8100
 TTTGTACGACGTGGTTACAAAGCTCCCTTGGCGTGTGGAAAGCTCCTACGGATTCA
 ATACTCACCAGGACAGCAGGGTTGAATTCTCGTGCACGCTGGAAAGTCCAAGAAAACCC
 AATGGGTTCTGTATGATACCGCTGCTTGACTCCACAGTCAGTGAGAGCGACATCCG
 TACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAACGCCGCTGGCCATCAA
 GTCCCTCACCGAGGAGGCTTATGTTGGGGCCCTTACCAATTCAAGGGGGAGAACTG-8400
 CGGCTATCGCAGGTGCCCGCGAGCGCGTACTGACAACTAGCTGTGGTAACACCCCTCAC
 TTGCTACATCAAGGCCGGCAGCTGCGAGCCGAGGGCTCAGGACTGCACCATGCT
 CGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGTCCAGGAGGACGCC
 GAGCCTGAGAGCCTTCACGGAGGCTATGACCAAGGTACTCCGCCCTGGGACCCCC
 ACAACCAGAACATGACTGGAGCTCATAACATCATGCTCCTAACGTGTCAGTCGCCA-8700
 CGACGGCGCTGGAAAGAGGGTCAACTACCTACCCGTGACCCACAAACCCCCCTGCCGAG
 AGCTGCGTGGGAGACAGCAAGACACACTCCAGTCATTCCTGGCTAGGCAACATAATCAT
 GTTTGCCCCCAGACTGTGGCGAGGATGATGACTGATGACCCATTCTTACGCTCCTTAT
 AGCCAGGGACCAAGCTGAACAGGCCCTCGATTGCGAGATCTACGGGGCTGCTACTCCAT
 AGAACCAACTGGATCTACCTCCAATATTCAAAGACTCCATGGCCTCAGGCCATTTC-9000
 CCACAGTTACTCTCCAGGTGAAATTAAATAGGGTGGCCGATGCCCTCAGAAAACCTGGGGT

G

ACCGCCCTGGCAGCTTGGAGACACCGGGCCGGAGCGTCCGCCCTAGGCTTCTGGCCAG
 AGGAGGCAGGGCTGCCATATGTGGCAAGTACCTCTCAACTGGCAGTAAGAACAAAGCT
 CAAACTCACTCCAATAGCGGCCGCTGGCAGCTGGACTGTCCGGCTGGTTCACGGCTGG
 CTACAGGGGGAGACATTATCACAGCGTGTCTCATGCCCGGGCCGCTGGATCTGGTT-9300
 TTGCCTACTCCTGCTTGCAGGGTAGGCATCTACCTCTCCCCAACCGATGAAGGTT
 GGGTAAACACTCCGGCCT-----3' terminus

Some clonal heterogeneities producing amino acid
 substitutions are shown. There are many other
 "silent mutations (not shown).

FIG. 90A

R T
MSTNPKPQKKNRNTNRRPQDVKFPGGGQIVGGVYLLPRRGPRLGVRATR
KTSERSQPRGRQQPIPKARRPEGRTWAPQPGYPWPLYGNEGCGWAGWLLSP-100
RGSRPSWGPTDPRRRSRNLGKVIDTLTCGFADLMGYIPLVGAPLGBAARA

T
LAHGVRVLEDGVNYATGNLPGCSFSIFLLALLSCLTVPASAYQVRNSTGL-200
YHVTNDCPNSSIVYEAADAILHTPGCVCREGNASRCWAMTPTVATRD
GKLPATQLRRHIDLLVGSATLCSALYVGDLCGSVFLVGQLFTSPRRHWT-300

V
TQGCNCISYPGHIITGHRMAWDMMMNWSPTTALVMAQLLRIPQAILEDIA
AHWGVLAGIAYSMVGNWAKVLVVLLFAGVDAETHVTGGSAGHTVSGFV-400
SLLAPGAKQNVQLINTNGSWHLNSTALNCNDSLNTGWLAGLFYHHKFNS
GCPERLASCRPLTDFDQGWGPISYANGSGPDQRPYCWHYPPKPCGIVPAK-500
SVCVPVYCFTPSPVVVGTTDRSGAPTYSWGENDTDVFVLNNTRPLGNWF
GCTWMNSTGFTKVCGAPPVCIGGAGNNTLHCPTDCFRKHPDATYSRCGSG-600

I
PWLTPrCLVDYPYRLWHYPCTINYTIKFIRMYVGGVEHRLEAACNWTRGE
RCDLEDRDRSELSPLLTTTQWQVLPCSFTTLPALSTGLIHLHQNIVDQ-700
YLYGVGSSIASWAIKWEYVLLLFLLLADARVCSCLWMMLLISQAAALEN
LVILNAASLAGTHGLVSFLVFFCFAWYLKGKWPAGAVTFYGMWPLLLL-800

(N)
LALPQRAYALDTEVAASC GG VVL VGL MALT LSPYY KRY ISWCLWWLQYFL
TRVEAQLHVWIPPLNVRGGRDAVILLCAVHPTLVFDITKLLAVFGPLW-900
ILQASLLKVPYFVRVQGLLRFCALARKMIGGHYVQMVIIKLGALTGTYVY
NHLTPLRDWAHNGLRDLAVAVEPVVFQS METKLI TGADTAACGDI INGL-1000
PVSARRGREILLGPADGMVSKGWRL LAPITAYAQQT RGLL GCIITS LTGR
DKNQVEGEVQIVSTAATQFLATCINGVCWTVYHGAGTRTI ASPKGPVIQM-1100

S T
YTNV DQDL VGWPAPQGSRS LTPCTCGSSDLYL VTRHADVIPVRRRGDSRG
SLLSPRPISYLGKSSGGPLLC PAGH A VGIFRAAV CTRGVAKAVDFIPVEN-1200
LETTMRSPVFTDNSSPPVVPQSFQVAHLHAPT GSGKSTKVPAA YAAQGYK

L
VLVLPNSVAATLGFGAYMSKAHGIDPNIRTGVRTITTGSPITYSTYGKFL-1300
ADGGCGGAYDIIICDECHSTDATSI LGIGTVLDQAE TAGARL VV LATAT
PPGSVTVPHPNIEEVALSTTGEIPFYGKAIPLEVIKGGRHLIFCHSKKC-1400
DELAALKVALGINAVAYYRG LDVSVIPTSGD VVVV ATDALMTGYTGDFDS

Y (S)
VIDCNTCVTQTVDFSLDPFTIETITLPQDAVSRTQRRGRTGRGKPGIYR-1500
FVAPGERPSGMFDSSVLCECYDAGCAWYELTPAETTVRLRAYMNTPGLPV
CQDHLEFWEGVFTGLTHIDAHFLSQTKQSGENLPYLVAYQATVCARAQAP-1600
PPSWDQMWKCLIRLKPTLHGPTPLLYRLGAVQNEITLTHPVTKYIMTCMS
ADLEVVTSTWVLVGGVLAALAAYCLSTGCVVIVGRVVLSGKPAIIPDREV-1700
LYREFDEMEECSQHL PYIEQGMM LAE QFKQKA LG LQTA SRQAEVIA PAV
QTNWQKLETFWAKHMWNFISGIQYLAGLSTLPGNP AIASLMAFTAATVSP-1800
LTTSQTLLFNILGGW VAAQLAAPGAATAFVGAGLAGAAIGSVGLGKV LID

FIG. 90B

(G)
ILAGYGAGVAGALVAFKIMSGEVPSTEDLVNLLPAILSPGALVVGVCAA-1900

(HC)
ILRRHVGPGEGAVQWMNRIFAFAASRGNHVSPTHYVPESDAARVTAILSS
LTVTQLLRRLHQWISSECTTPCSGSWLRDIWDWICEVLSDFKTWLKAKLM-2000

(V)
PQLPGIIPFVSCQRGYKGWVWRGDGIMHTRCHCGAEITGHVKNGTMRIVGPR
TCRNMWSGTFPINAYTTGPCTPLPAPNYTFALWRVSAEEYVEIRQVGDFH-2100
YVTGMTTDNLKCPCQVPSPEFFTTELGDGVRLHRFAPPCKPLLREEVSFRVG
LHEYPGSQLPCEPEPDVAVLTSMLTDPSHITAEEAGRRLARGSPPSVAS-2200
SSASQLSAPSLKATCTANHDSPDAELIEANLLWRQEMGGNITRVESENKV
VILDSFDPLVAEEDEREISVPAEILRKSRRFAQALPVWARPDYNPPLVET-2300

(S)
WKKPDYEPPVVGCPPLPKSPPVPPRKRTVVLTESTLSTALAELATR

(FA)
SFGSSSTSGITGDNTTSSEPAAPSGCPPDSDAESYSSMPPLEGEPEGDPDL-2400
SDGSWSTVSSEANAEDVVCCSMSYSWTGALVTPCAEEQKLPINALSNSL
LRHHNLVYSTTSRSACQRQKKVTFDRLQVLDHYQDVLKEVKAAASKVKA-2500

(F)
NLLSVEEACSLTPPHSAKSFKGYGAKDVRCHARAKAVTHINSVWKDLLEDN
VTPIDTTIMAKNEVFCVQPEKGGRKPARLIVFPDLGVRVCEKMALYDVVT-2600
KLPLAVMGSSYGFQYSPGQRVEFLVQAWKSKKTPMGFSYDTRCFDSTVTE

(G)
SDIRTEEAIIYQCCDLDpqARVAIKSLTERLYVGGPLTNSRGENCYRRCR-2700
ASGVLTTSCGNTLTCYIKARAACRAAGLQDCTMLVCGDDLVVICESAGVQ
EDAASLRAFTEAMTRYSAPPGDPPQPEYDLELITSRSSNVSAHDGAGKR-2800
VYYLTRDPTTPLARAAWETARHTFVNWLGNIMFAPTLWARMILMTHFF
SVLIARDQLEQALDCEIYGACYSIEPLDLPPIQRLHGLSAFSLHSYSPG-2900

G
EINRVAACLRKLGVPPLRAWRHRARSVRARLLARGGRAAICGKYLFNWAV

(P)
RTKLKLTPIAAGQLDLSGWFTAGYSGGDIYHSVSHARPRWIWFCLLLLAA-3000
AGVGIYLLPNR0-3011

Stop codon

() = Heterogeneity due possibly
to 5' or 3' terminal cloning
artefact.

FIG. 91

